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The Refrigeration Service Engineer

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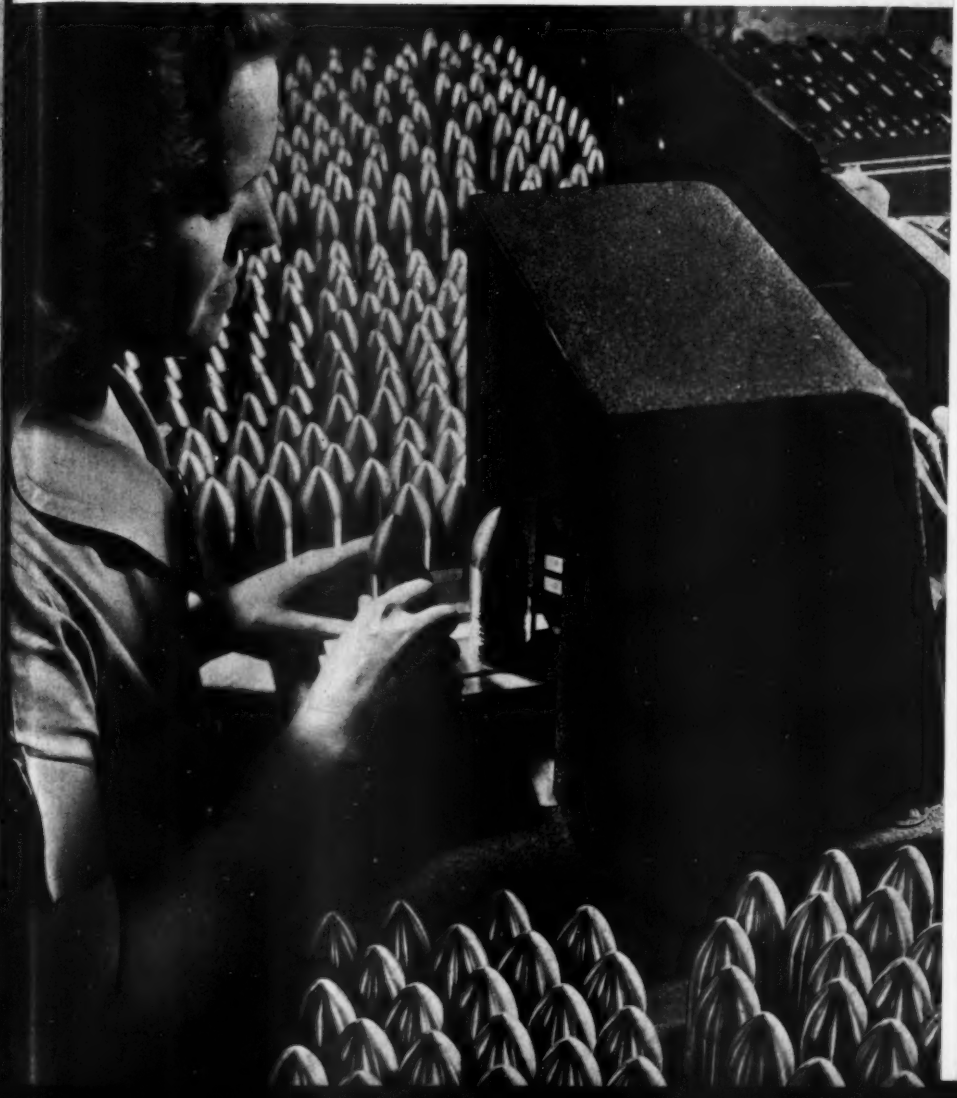

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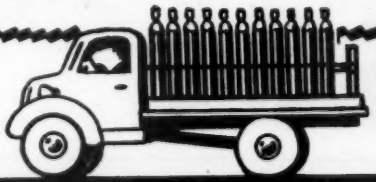

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When The Expansion Valve Freezes

EXPANSION VALVE FROZEN. **This is one of the common reasons for expansion valve failure on methyl chloride and Freon systems. Moisture usually freezes the valve closed and starves the evaporator, but it sometimes freezes it in the open position and causes flooding. A very small amount of moisture in the system can cause a lot of trouble and simply because there is a drier on the system is no assurance that it is dry.**

large for the system. Furthermore, if the moisture has frozen up in the evap-

to operate for as long as a year without trouble and then suddenly freeze up, the moisture having finally worked out of the evaporator or crank case.

Detection:

A. If compressor is kept off until expansion valve warms up it will then control properly for a short time but may again freeze up. Don't try to heat valve while compressor is operating.

B. Tapping the valve body may while. This is a sure indication of moisture and the only sure way to correct the trouble is to

is a drier on the system is no assurance that it is dry.

large for the system. Furthermore, if the moisture has frozen up in the evaporator or settled under the oil of the crank case it is likely to stay there regardless of the drier. When applying the drier allow the system to warm up and then cycle the compressor by hand so as to circulate the refrigerant while keeping the pressure above the freezing point. It will help to obstruct the condenser during this time. Oil should be drained from the crank case and replaced by a new charge.

It is not at all uncommon for systems

compressor is operating.

B. Tapping the valve body may while. This is a sure indication of moisture and the only sure way to correct the trouble is to remove the moisture from the system by cleaning out or using a drier. Don't damage the valve by hammering.

C. A small amount of methanol poured into the liquid line may break valve loose temporarily. Don't depend on the methanol — moisture should be removed from the system. Don't use methanol on SO_2 systems.

SYMPTOMS					PROBABLE CAUSE
Condition of Job	*Evaporator Condition*	*Running Time*	*Suction Pressure*	*Suction Line Temperature*	
Warm or Normal	Starved or Partly Refrig.	Short Cycle	Low	Warm	Expansion Valve Frozen
Normal or Cold	Flooded	Too Long	Normal or High	Flooded	Expansion Valve Frozen

Reprints of this—the second of a series of helpful hints—will be supplied upon request.

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The refrigeration industry has two patriotic services to perform: to supply the essential, military, civilian and industrial needs for refrigeration and to keep existing refrigeration units operating. Only by giving our fullest cooperation can the refrigeration industry help to win this War and return to us our normal way of life.

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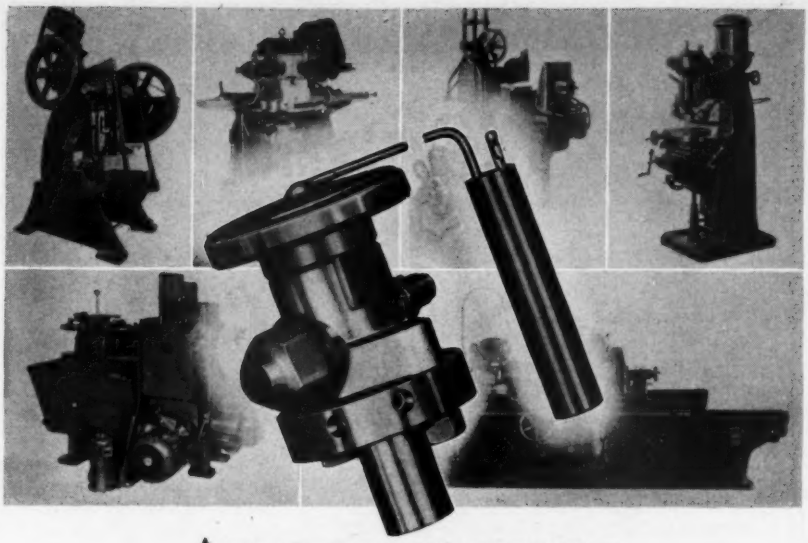

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The Refrigeration Service Engineer

Vol. 10 No. 7

July, 1942

A Monthly Illustrated Journal Devoted to the Interests of the Refrigeration Service Engineer in the Servicing of Domestic and Small Commercial Refrigeration Systems and Oil Burners

Official Organ
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COVER
Girl inspectors who formerly tested household appliances now turn deft fingers to similar tests for munitions as refrigerator manufacture ends at Westinghouse factory.

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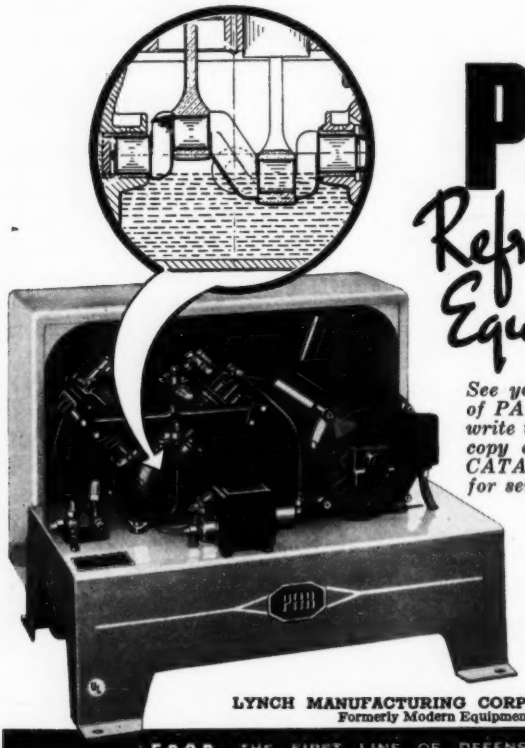

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The Refrigeration Service Engineer

Vol. 10, No. 7 CHICAGO, JULY, 1942 $2.00 Per Annum

Amended Commercial Refrigeration Limitation Order (L-38) Removes Some Restrictions

Among Other Things Amendment Defines Repair Parts and Excludes Them from Limitations of Order and Clarifies Repair Order

MANUFACTURERS and distributors of industrial and commercial refrigerator and air conditioning equipment are afforded some degree of relief from the restrictions imposed by Limitation Order L-38, by Amendment No. 1 to the order.

Main provision of the amendment permits sale of certain items of equipment listed under paragraph (e) of the order, without the necessity of obtaining a preference rating to cover the installation of the finished product. Under the order as originally issued such items could be sold only on an A-9 or higher preference rating, or to agencies listed in a Preferred Order Group.

Added to the Preferred Order Group are Army exchanges, naval ship-stores, officers' messes and officers', non-commissioned officers' and enlisted men's clubs.

Repair parts are defined, and excluded from the provisions of the order and may now be sold without preferred status.

Bottlers of carbonated beverages and manufacturers of ice cream for resale are included by the amendment among the authorized channels of distribution, and their stocks of ice cream cabinets and beverage coolers are released for sale in the same manner as the stocks of dealers and distributors.

Added to the list of items which may no longer be manufactured, save on direct Army and Navy orders, are ice cream cabinets and evaporative coolers. All producers' inventories of the items listed under paragraph (e), including these cabinets and coolers, remain frozen.

Because of the heavy demand for draft-beer coolers, due to shortage of bottle caps and curtailed deliveries of bottled and canned beer, these coolers remain frozen and dealers', distributors' and manufacturers' inventories must be reported to the War Production Board.

Manufacturers having fabricated parts and sub-assemblies may now assemble these into finished products, if no further raw materials are consumed in the process. This provision, however, does not affect items in paragraph (e).

All appeals for relief from the stop-production provisions of the order must be made on Form PD-520.

Commenting on the amendment, Sterling F. Smith, administrator of the order for the Air Conditioning and Commercial Refrigeration Branch, said that there will be no further relaxation of the prohibition against sales without rated certificates. Installation

of such essential equipment as food and dairy product storage cabinets, reach-in refrigerators, farm milk coolers, ice storage cabinets, industrial water cooling and industrial air-conditioning may be made only on rated orders. Applications for priority assistance must be made by the ultimate user on Form PD-1A.

The new order, in its entirety, is printed with the changes authorized by Amendment No. 1 included in their proper place and printed in boldface type.

Some confusion had existed as to whether or not repair parts for the maintenance of existing equipment came under the provisions of Limitation Order L-38. It was learned that this was not the intent of the order and that some interpretations had been made by the Legal Department that the order in effect covered such parts and made the provisions of the P-100 repair order not applicable to the industry. This confusion has existed for several weeks, but has now been definitely clarified by the amendment.

INDUSTRIAL AND COMMERCIAL REFRIGERATION AND AIR CONDITIONING MACHINERY AND EQUIPMENT

GENERAL LIMITATION ORDER NO. L-38—Issued May 15th, 1942 Including Provisions of Amendment No. 1 —Issued June 18, 1942

Section 1071.1—GENERAL LIMITATION ORDER L-38

(a) *Applicability of Priorities Regulation No. 1.* This Order and all transactions affected thereby are subject to the provisions of Priorities Regulation No. 1 as amended from time to time, except to the extent that any provision hereof may be inconsistent therewith, in which case the provisions of this Order shall govern.

(b) *Definitions.* For the purpose of this Order:

(1) "Refrigerating and Air Conditioning Equipment" means any type of machinery equipment or other apparatus (except a Domestic Mechanical Refrigerator as defined in paragraph (b) (2) hereof and except a Domestic Ice Refrigerator as defined in paragraph (b) (3) hereof) which is primarily designed to lower the temperature of matter, or to regulate the temperature or humidity of air, by mechanical, chemical, or physical means, and includes all insulated enclosures, materials, parts, implements and devices used with such machinery, equipment or apparatus in causing it to perform its function of refrigeration or air conditioning.

(2) "Domestic Mechanical Refrigerator" means any refrigerator for household use which operates either by compression or absorption and which has a net capacity of 16 cubic feet or less (National Electric Manufacturing Association rating) but does not include any low temperature mechanical refrigerator designed for the storage of frozen foods or for the quick freezing of food where the low temperature compartment customarily operates at a temperature of not higher than 15 degrees above zero Fahrenheit and contains 75% or more of the total refrigerating space in the refrigerator.

(3) "Domestic Mechanical Refrigerator" means any non-mechanical ice chest or ice box for home use.

(4) "Producer" means any person who manufactures any Refrigerating and Air Conditioning Equipment.

(5) "Preferred Order" means any order or contract for Refrigerating and Air Conditioning Equipment to be delivered to or for the account of the Army or Navy of the United States (including Army Exchanges, Naval Ship Stores, Officers' Messes and Officers', Non-Commissioned Officers' and Enlisted Men's Clubs) the United States Maritime Commission, the Panama Canal, the Coast and Geodetic Survey, the Coast Guard, the Civil Aeronautics Authority, the National Advisory Commission for Aeronautics, the Office of Scientific Research and Development, or any foreign country pursuant to the Act of March 11, 1941, entitled "An Act to Promote the Defense of the United States" (Lend-Lease) or any order or contract for such equipment to or for the account of any person who has received an order or certificate of the Director of Industry Operations assigning a preference rating of A-9 or higher specifically to the delivery of an item or items of such equipment and issued to and designating the person seeking to purchase said item or items or any order or contract for such equipment to which has been assigned a preference rating by operation of Preference Rating Order No. P-126 (Material for Emergency Servicing of Refrigerating and Air Conditioning Machinery and Equipment, issued April 20, 1942) as amended from time to time.

(6) "Unused" when applied to Refrigerating and Air Conditioning Equipment means any such equipment which has never been sold and delivered to an ultimate consumer.

(7) "Fabricated Part" means an assembly or part which is ready for incorporation into any item of Refrigerating and Air Conditioning Equipment without the use of any raw material.

(8) "Emergency Repair Service" means the emergency repair of Refrigerating and Air Conditioning Equipment (excluding any domestic mechanical refrigerator) which is actually installed, the condition of which renders its operation unsafe or ineffective, including the replacement or reconditioning of necessary parts therefor, whether or not a breakdown has actually occurred. It includes the emergency replacement of equipment which has been worn out, damaged, or destroyed, but does not include the installation of any equipment (new or used) to replace usable equipment or the substitution of equipment of inherently greater capacity than that which it is necessary to replace.

(c) *Prohibiting Sale of Refrigerating and Air Conditioning Equipment.*

(1) Except to fill a Preferred Order, or as provided in paragraph (c) (2) hereof, no Producer, dealer or other authorized channel of distribution (including a bottler of carbonated beverages and a manufacturer of ice cream for resale) of Refrigerating and Air Conditioning Equipment shall, after the effective date

(Continued on page 46)

Two and Three Stage Compression

By P. B. REED*

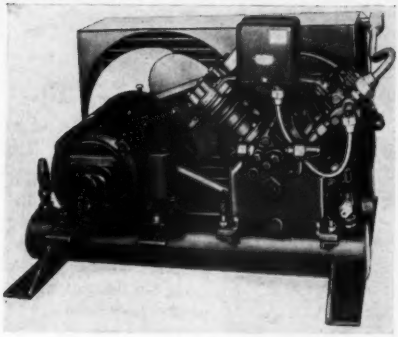


Fig. 1—A two stage, single compressor condensing unit.

A FEW years ago the electric refrigeration industry concerned itself very little with temperatures below —10° Fahrenheit—ice cream storage temperatures. Then came the counter-freezer, sharp freezer, locker plants and other installations calling for temperatures down to, roughly —30° to —40°. This general tendency toward lower temperatures required some modifications of design of the condensing units, particularly displacement per horsepower, discharge and suction valve design and tightening of clearance limits. The introduction of Freon-12, was beneficial to and perhaps stimulated the increased use of low temperature equipment as its high density and low boiling points make it particularly applicable to low temperatures in these brackets.

Temperatures down to about —40° F. can be produced with single-stage compression, assuming, of course, good design of the condensing unit and evaporator. These temperatures are obtainable with a compression ratio of approximately 1 to 15, which is about the highest ratio that can be used efficiently with single-stage compression. At —40° F. the evaporating pressure (absolute) of Freon-12 is 9.3 lbs. per sq. in. (11 in. vacuum) and with an allowable condensing pressure of 140.0 lbs. per sq. in. absolute (125.3 gauge) the compression ratio is approximately 1 to 15. Operating at these temperatures a single-stage compressor must be in fine condition with losses (especially clearance volume losses) held to the minimum.

Advancement in technique in scientific developments and industrial processing and testing have, within the past year or two, required temperatures down to —100° F. for dehydration of air or liquids, metal shrinkage or "cold" treatment and for testing instruments for performance at extremely low temperatures. To obtain temperature from —40° to —75° F. two-stage compression is used in order to avoid the very high losses and inefficient operation that would be encountered with single-stage compression. Three-stage compression is desirable at temperatures from —75° to —100° F. In two-stage compression the suction gas is compressed in two steps or stages, the discharge gas of the first stage being fed into the suction side of the second stage and the recompressed discharge gas passing to a condenser, receiver and expansion valve in the usual manner. In three-stage compression another step is added with the second stage discharge passing into the suction side of the third stage, again recompressed and then to the condenser. Separate compressors for each stage may be used but a more compact and very efficient method is to combine the two compression steps in one "two-stage compressor," using 3 of the cylinders of a 4 cylinder compressor as the low or first stage and one cylinder as the high or second stage. In a 4 cylinder two-stage compressor the suction side of the one cylinder (second stage) is separated from the suction side of the other 3 cylinders, and, by means of special passages in the valve plate and head, is connected instead to the discharge side of the 3 low pressure cylinders. A "three-stage compressor" may be built in a similar manner or three-stage compression may be obtained by using a two-stage compressor with a standard single-stage compressor of suitable displacement for either the first or third stage.

Fig. 1 shows a ½ hp. 4 cylinder, V type, air cooled two-stage unit in which 3 cylinders

*Service Manager, E. R. and A. C. Division, Servel, Inc.

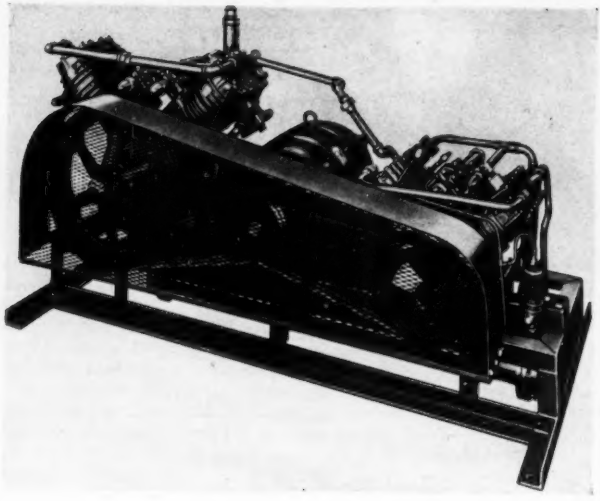


Fig. 2—A three stage, two compressor condensing unit.

comprise the first stage and one cylinder the second stage. This unit is designed for evaporator temperatures down to —75° F. with Freon-12. In Fig. 2 is shown a three-stage condensing unit. The compressor on the left is a standard single stage, 4 cylinder, V type, acting as the first stage and discharging into the suction of 6 cylinders (second stage) of the two-stage 8 cylinder, V type compressor on the right. The discharge from the 6 cylinders of the two-stage compressor passes to the suction of the remaining 2 cylinders comprising the third stage. Both compressors are belt driven by one 10 hp. motor. The receiver is mounted underneath in the frame. This unit is designed for use with separate condensers, either water cooled or the evaporative type. This unit is for evaporator temperatures down to as low as —100° F. with Freon-12.

How It Works

To illustrate how stage compression works out, let us take as an example a two-stage water cooled condensing unit connected to an evaporator to be held at —70° F. as shown in Fig. 3. The suction gas from the —70° evaporator enters the first 3 cylinders at a pressure of 4 lbs. per sq. in. absolute (22" vacuum) and leaves them at a discharge pressure of approximately 20 lbs. per sq. in. absolute (5 lbs. per sq. in. gauge). This 20 lbs. per sq. in. absolute, is also the suction pressure of the one "high-pressure" cylinder from which it leaves at a final discharge pressure (head pressure) at, for example 130 lbs. per sq. in. (115 lbs. per sq. in. gauge), depending, of course, upon the temperature of the condensing water. This gives a compression ratio of 1 to 5 (4 to 20) in the first stage and 1 to 6.5 (20 to 130) in the second stage. Comparing these ratios with the 1 to 15 for the much higher temperature of —40°, readily shows why the 2 stage compressor is incomparably more efficient for very low temperatures than the single stage. Single staging for —70° would require the impractical compression ratio of 1 to 32.5. A clearance volume loss (due to piston head clearance, passages to the discharge valves and unusable space around the suction valves) of 1.2% would reduce the pumping capacity of such a compressor to nothing, all of its effective displacement being used up in merely re-compressing the expanded compressed gas in the "waste space" represented by the clearance volume. It will be seen from the above that the displacements of the first and second stages must be "balanced" so that the displacement of the first stage will be sufficient to keep suction pressure in the —70° evaporator down to 22 inch vacuum and the displacement of the second stage only sufficient to recompress the gas to a normal discharge pressure and temperature.

The gas in the inter-stage (at 5 lbs. per sq. in. gauge) has been compressed and thus contains super-heat as well as the heat of evaporation. Some means must be employed to remove most of this super-heat in order to avoid overheating the valves, etc., of the second stage. One way to remove this super-heat is to provide an inter-stage cooler, in which the gas is cooled by water, or cold suction gas in a heat-interchanger arrangement. A much better way, however, is shown

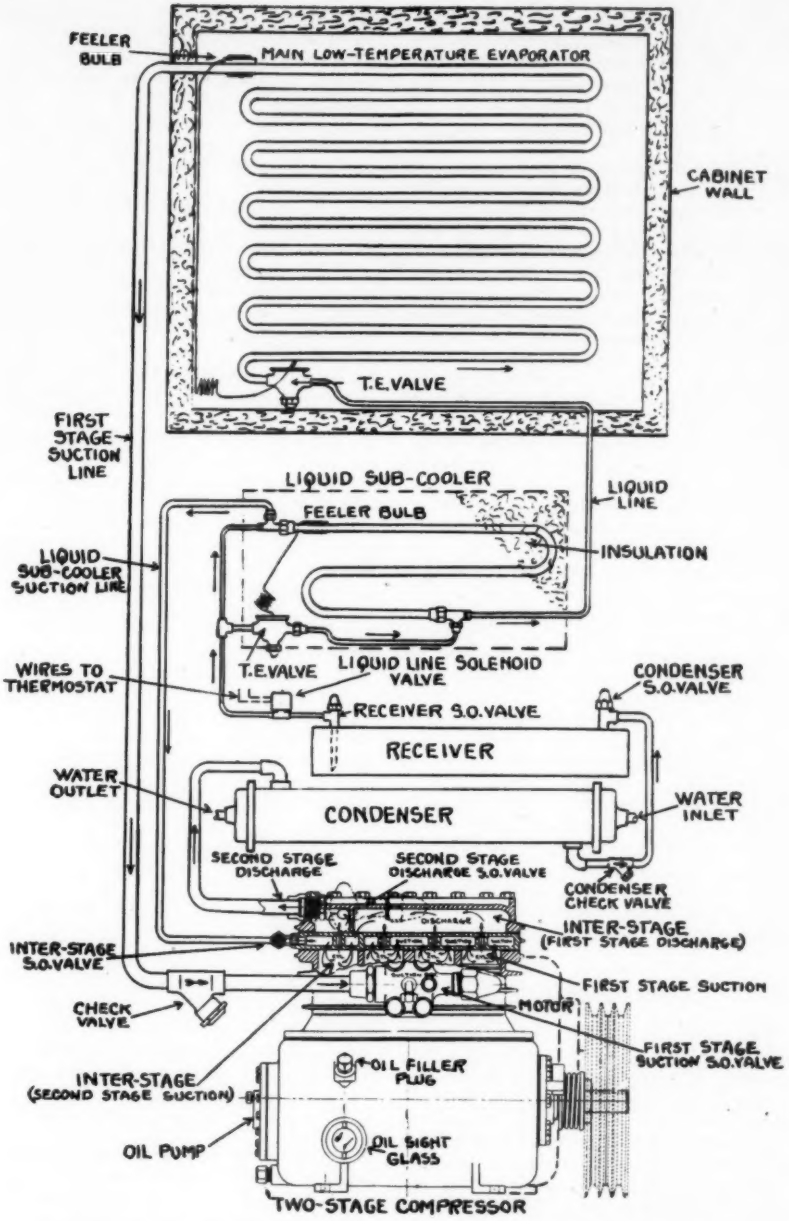


Fig. 3—A two stage, single compressor system showing the method of liquid sub-cooling.

in Fig. 3. Cold, saturated vapor from the liquid sub-cooler is "tailed out" to the inter-stage of the compressor and this cold gas mixed with the discharge from the first stage absorbs the super-heat.

Liquid Sub-cooling

The liquid refrigerant in the receiver will be at approximately room temperature. At 80° F. the latent heat of this liquid refrigerant (Freon-12) is 60.52 B.t.u. per pound; but 32.58 B.t.u. are required to cool one pound of it through the 150 degrees from 80° to —70° so that only 27.94 B.t.u., or less than one half, is left to do any actual refrigeration in the evaporator, for certainly the liquid F-12 must itself be cooled in the evaporator to the evaporator temperature. This is a sacrifice of a large percentage of "cooling ability" of the liquid, and a reduction of the possible capacity of the system. If the liquid is sub-cooled to —80° F. (which corresponds to 20 lbs. per sq. in., absolute, the inter-stage pressure) only 12.87 B.t.u. would be required to cool one pound of the —8° liquid on down to —70° and since the latent heat of —8° liquid is 70.72 B.t.u. per pound (instead of 60.52 at 80°) 57.85 B.t.u. per pound "cooling ability" is obtained instead of 27.94 B.t.u. per pound.

Thus the liquid sub-cooler is provided. It is simply an auxiliary evaporator operating in multiple with the main—70° evaporator. It is made in the form of a heat interchanger, concentric-tube construction, with the evaporating refrigerant fed into the inner tube by a separate expansion valve and as mentioned above, passing out to the inter-stage of the compressor. The warm liquid refrigerant at 80° from the receiver passes in a counterflow direction through the annular space between the two tubes, and is precooled to about —5° before it goes to the expansion valve of the main —70° evaporator.

Careful Design Needed

The —70° evaporator must be carefully designed to give required capacity at a temperature difference of from 3° to 7°. The tubing in the evaporator must be properly sized to hold the pressure drop low and yet keep the velocity of the vapor high enough to provide good heat transfer and adequate movement of the oil so as to prevent oil logging. The temperature difference between the room and the cold evaporator is great (about 150°, —almost 4 times that on an ordinary market cooler) A —70° F. evaporator should be insulated with the equivalent of at least 10 inches of sheet cork.

The check valve in the main suction line prevents gas from condensing back into the cold evaporator during the off cycle, which would both warm the evaporator and cause slugging of this liquid refrigerant at the start of the next running cycle.

Controlled Thermostatically

Two and three installations are usually controlled thermostatically rather than with a pressure control. The thermostat may actuate the motor directly or through a contactor depending upon the horsepower and type of motor. In many cases it will be found better to have the thermostat actuate a solenoid valve in the liquid line and have the machine pump down and cut off on a low pressure control in the same manner as the standard air conditioning system. A high pressure cut-out in the discharge pressure phase is advisable to guard against excessive discharge pressures due to water failure or entrance of air into the vacuum side of the system. More elaborate control systems are resorted to on special applications of 2 and 3 stage units to processing and testing apparatus for military and industrial uses.

Obviously, great care should be exercised to prevent the entrance of air or moisture into these very low temperature systems. Liquid line dehydrators (Drierite, Activated Alumina or Selica-Gel) should be included with the original installation but may be removed after it is assured that the system is dry and free from leaks. Only oil recommended by the manufacturer should be used. The system should be kept free of all other foreign substances.

Suction and liquid line sizes are very important, particularly the former. The suction line must be sized to allow no more than ½ lb. per sq. in. pressure drop between the evaporator and the compressor. For normal length of runs, use the tube sizes corresponding to the suction and liquid line service valves on the condensing unit, as furnished by the manufacturer.

S S S

——American troops are being equipped because of that radio-phonograph Mr. and Mrs. America didn't buy this year. The steel in an average radio-phonograph would make close to a dozen bayonets.

Maximum Prices on Used Refrigerators

(Continued from the June Issue)

In an order issued May 6, the Office of Price Administration placed a price ceiling on used refrigerators. The June issue contained a complete reprint of this order together with the maximum prices on the Apex, Coldspot and Copeland units. The following tables contain the balance of the prices as issued by O. P. A.

CROSLEY

Year	Model	Price A*	Price B*	Price C*
1932	C-35	$10.50	$18.00	$48.00
	C-45	10.50	18.00	48.00
	C-55	10.50	18.00	48.00
1933	D-35	10.50	18.00	48.00
	D-45	10.50	18.00	48.00
	D-60	10.50	18.00	48.00
1934	EA-35	19.50	27.00	57.00
	EA-43	21.00	28.50	58.50
	EA-55	21.00	28.50	58.50
	E-43	21.00	28.50	58.50
	E-55	21.00	28.50	58.50
	E-70	24.00	31.50	61.50
1935	FR-30	24.00	31.50	61.50
	FR-35	25.50	33.00	63.00
	FR-40	25.50	33.00	63.00
	FA-35	25.50	33.00	63.00
	FA-40	25.50	33.00	63.00
	FA-50	28.50	36.00	66.00
	FA-60	31.50	39.00	69.00
	FA-70	36.00	43.50	73.50
	F-43	25.50	33.00	63.00
	F-55	28.50	36.00	66.00
	F-70	36.00	43.50	73.50
	PFA-50	28.50	36.00	66.00
	PFA-60	31.50	39.00	69.00
	PFA-70	36.00	43.50	73.50
	PF-43	25.50	33.00	63.00
	PF-55	28.50	36.00	66.00
	PF-70	36.00	43.50	73.50
1936	GAQ-30	33.00	40.50	69.65
	GAQ-35	34.50	42.00	72.00
	GAQ-43	34.50	42.00	72.00
	GAQ-50	36.00	43.50	73.50
	GAQ-60	37.50	45.00	75.00
	GAQ-70	40.50	48.00	78.00
	PGKQ-50	36.00	43.50	73.50
	PGKQ-60	37.50	45.00	75.00
	PGKQ-70	40.50	48.00	78.00
	PGKT-50	36.00	43.50	73.50
	PGKT-60	37.50	45.00	75.00
	PGKT-70	40.50	48.00	78.00
1937	HB-1-30	39.00	46.50	69.65
	HB-1-31	39.00	46.50	69.65
	HB-1-36	40.50	48.00	78.00
	HB-1-41	40.50	48.00	78.00
	HB-1-50	43.50	51.00	81.00
	HB-1-60	45.00	52.50	82.50
	HB-5-36	40.50	48.00	78.00
	HB-5-71	48.00	55.50	85.50
1937	HL-5-43	42.00	49.50	79.50
	HL-5-50	45.00	52.50	82.50
	HL-5-61	52.50	60.00	90.00
	HL-5-71	57.00	64.50	94.50

CROSLEY—Continued

Year	Model	Price A*	Price B*	Price C*
1938	KB-5-30	$48.00	$55.50	$64.50
	KB-5-31	49.50	57.00	66.00
	KB-5-36	51.00	58.50	67.50
	KB-5-43	52.50	60.00	69.00
	KB-5-50	54.00	61.50	70.50
	KB-5-60	55.50	63.00	72.00
	KB-5-71	58.50	66.00	75.00
	KL-5-43	54.00	61.50	70.50
	KL-5-50	55.50	63.00	72.00
	KL-5-61	57.00	64.50	73.50
	KL-5-71	61.50	69.00	78.00
1939	LA-9-30	54.00	61.50	70.50
	LA-9-40	55.50	63.00	72.00
	LA-9-50	60.00	67.50	76.50
	LA-9-60	63.00	70.50	79.50
	LB-5-45	58.50	66.00	75.00
	LB-5-55	66.00	73.50	82.50
	LB-5-65	73.50	81.00	90.00
	LB-5-80	88.50	96.00	105.00
	LL-5-45	61.50	69.00	78.00
	LL-5-55	73.50	81.00	90.00
	LL-5-65	82.50	90.00	99.00
	LL-5-80	97.50	105.00	114.00
	KWI-608	52.50	60.00	69.00
	LSB-5-60	82.50	90.00	99.00
	LSB-5-80	97.50	105.00	114.00
	LSL-5-60	79.50	87.00	96.00
	LSL-5-80	105.00	112.50	121.50
1940	MW-9-60	58.50	66.00	69.97
	MW-9-60-A	63.00	70.50	76.97
	MLA-9-60	70.50	78.00	83.97
	MA-9-60-S	72.00	79.50	88.50
	MA-9-50	67.50	75.00	83.97
	MA-8-80	81.00	88.50	97.50
	MA-8-80-S	78.00	85.50	94.50
	MB-9-45	67.50	75.00	84.00
	MB-9-55	73.50	81.00	90.00
	MB-9-60	78.00	85.50	94.50
	MB-8-70	87.00	94.50	103.50
	MB-8-80	97.50	105.00	114.00
	ML-9-45	75.00	82.50	91.50
	ML-9-55	82.50	90.00	99.00
	ML-8-70	94.50	102.00	111.00
	ML-8-80	103.50	111.00	120.00
	MSL-8-75	109.50	117.00	126.00

DAYTON

1931	4-A-2	10.50	18.00	48.00
	5-A-2	10.50	18.00	48.00
	6-A-2	10.50	18.00	48.00
	8-A-2	10.50	18.00	48.00

*** Price "A" in these tables is the maximum sale price of "as is" refrigerators. Price "B" unreconditioned refrigerators, and price "C" reconditioned refrigerators.**

DAYTON—Continued

Year	Model	Price A*	Price B*	Price C*
1932–3	4-A-2	$10.50	$18.00	$48.00
	5-A-2	10.50	18.00	48.00
	6-A-2	10.50	18.00	48.00
	8-A-3	10.50	18.00	48.00
	2-N-4	10.50	18.00	48.00
	2-N-5	10.50	18.00	48.00
	2-N-6	10.50	18.00	48.00
	3-N-6	10.50	18.00	48.00
	3-N-8	10.50	18.00	48.00
	6301-WP	10.50	18.00	48.00
1934	4-B-2	12.00	19.50	49.50
	5-B-2	13.50	21.00	51.00
	6-B-3	16.50	24.00	54.00
	7-B-4	18.00	25.00	55.50
	8-B-4	18.00	25.50	55.50
	2-83-P	18.00	25.50	55.50
1935	4-C-2	13.50	21.00	51.00
	5-C-2	13.50	21.00	51.00
	6-C-3	15.00	22.50	52.50
	7-C-4	16.50	24.00	54.00
	8-C-4	18.00	25.50	55.50
1936	4-S-2	16.50	24.00	54.00
	5-S-2	18.00	25.50	55.50
	6-S-4	21.00	28.50	58.50
	6-D-3	21.00	28.50	58.50
	7-D-4	21.00	28.50	58.50
	8-D-4	22.50	30.00	60.00
1937	4-E-2-U	22.50	30.00	60.00
	6-E-4-U	25.50	33.00	63.00
	7-E-6-U	28.50	36.00	66.00
	9-E-8	33.00	40.50	70.50
	6-E-4-D	28.50	36.00	66.00
	7-E-6-D	30.00	37.50	67.50
1938	4-H-2	27.00	34.50	43.50
	5-H-3	30.00	37.50	46.50
	5-H-4	30.00	37.50	46.50
	6-H-4	31.50	39.00	48.00
	6-H-5	31.50	39.00	48.00
	8-H-7	34.50	42.00	51.00
	10-H-8	45.00	52.50	61.50
1939	4-J	$37.50	$45.00	$54.00
	5-J	45.00	52.50	61.50
	6-J	46.50	54.00	63.00
	5-JD	49.50	57.00	66.00
	6-JD	52.50	60.00	69.00
	8-JD	58.50	66.00	75.00
	10-JD	67.50	75.00	84.00
	5-JDA	51.00	58.50	67.50
	6-JDA	54.00	61.50	70.50
	8-JDA	60.00	67.50	76.50
	5-JDB	51.00	58.50	67.50
	6-JDB	54.00	61.50	70.50
	8-JDB	60.00	67.50	76.50
	10-JDC	70.50	78.00	87.00
1940	4-MP	49.50	57.00	66.00
	6-MA	55.50	63.00	72.00
	6-MAD	57.00	64.50	73.50
	6-MSD	61.50	69.00	78.00
	8-MD	67.50	75.00	84.00
	8-MSD	70.50	78.00	87.00
	8-MCS	72.00	79.50	88.50
	10-MSD	97.50	105.00	114.00
	15-KD	112.50	120.00	129.00
	20-KD	127.50	135.00	144.00

SERVEL ELECTROLUX

1933	ED-30	$34.50	$42.00	$72.00
	ED-40	37.50	45.00	75.00
	ED-50	40.50	48.00	78.00
	ED-60	43.50	51.00	81.00
	ED-70	48.00	55.50	85.50
	ED-90	58.50	66.00	96.00
	ED-110	78.00	85.50	115.50
	EDP-50	45.00	52.50	82.50
	EDP-60	49.50	57.00	87.00
	EDP-70	52.50	60.00	90.00
	EDP-90	64.50	72.00	102.00
	EDP-110	82.50	90.00	120.00

SERVEL ELECTROLUX—Continued

Year	Model	Price A*	Price B*	Price C*
1934	EE-30A	$39.00	$46.50	$76.50
	EE-40	43.50	51.00	81.00
	EE-50	46.50	54.00	84.00
	EE-60	52.50	60.00	90.00
	EE-70	57.00	64.50	94.50
	EEL-90	69.00	76.50	106.50
	EEL-110	88.50	96.00	126.00
	EEP-50	51.00	58.50	88.50
	EEP-60	57.00	64.50	94.50
	EEP-70	63.00	70.50	100.50
	EELP-90	75.00	82.50	112.50
	EELP-110	93.00	100.50	130.50
1935	APTF-35	46.50	54.00	84.00
	APTF-45	49.50	57.00	87.00
	SF-45	54.00	61.50	91.50
	F-50	57.00	64.50	94.50
	F-70	72.00	79.50	109.50
	F-100	97.50	105.00	135.00
	PF-50	66.00	73.50	103.50
	PF-70	79.50	87.00	117.00
	PF-100	105.00	112.50	142.50
1936	G-410	60.00	67.50	97.50
	G-500A	67.50	75.00	105.00
	G-500	70.50	78.00	108.00
	G-700	82.50	90.00	120.00
	G-1000	112.50	120.00	150.00
	PG-500	76.50	84.00	114.00
	PG-700	90.00	97.50	127.50
	PG-1000	118.50	126.00	156.00
1937	H-300A	64.50	72.00	102.00
	H-410	73.50	81.00	97.30
	H-500A	82.50	90.00	120.00
	H-500	85.50	93.00	123.00
	H-600	91.50	99.00	129.00
	H-800	112.50	120.00	150.00
	H-1100	136.50	144.00	174.00
1938	J-300A	72.00	79.50	88.50
	J-410	82.50	90.00	99.00
	J-500A	91.50	99.00	108.00
	J-500	94.50	102.00	111.00
	J-600	102.00	109.50	118.50
	J-800	127.50	135.00	144.00
	J-1100	165.00	172.50	181.50
1939	K-300A	76.50	84.00	93.00
	K-410	83.65	83.65	83.65
	K-500A	100.50	101.15	101.15
	K-500	105.00	112.50	121.50
	K-600A	112.50	120.00	129.00
	K-600	115.50	123.00	132.00
	K-800A	136.50	144.00	153.00
	K-800	142.50	150.00	159.00
	K-1100	187.50	195.00	204.00
1940	L-300	82.50	90.00	99.00
	L-400	94.50	102.00	111.00
	L-500A	111.00	118.50	127.50
	L-500	115.50	123.00	132.00
	L-600A	121.50	129.00	138.00
	L-600	124.50	132.00	141.00
	L-800A	144.00	151.50	160.50
	L-800	148.50	156.00	165.00
	L-1100	247.50	255.00	264.00

FAIRBANKS-MORSE

1934	AL-4	$10.50	$18.00	$48.00
	AL-5	10.50	18.00	48.00
	AL-6	12.00	19.50	49.50
	AP-5	12.00	19.50	49.50
	AP-6	13.50	21.00	51.00
1935	B-4	13.50	21.00	51.00
	B-5	13.50	21.00	51.00
	B-6	15.00	22.50	52.50
	B-6S	15.00	22.50	52.50
	B-8	16.50	24.00	54.00

*** Price "A" in these tables is the maximum sale price of "as is" refrigerators. Price "B" unreconditioned refrigerators, and price "C" reconditioned refrigerators.**

FAIRBANKS MORSE—Continued

Year	Model	Price A*	Price B*	Price C*
1936	C-4A	$12.00	$19.50	$49.50
	C-4	15.00	22.50	52.50
	C-5	15.00	22.50	52.50
	C-6	16.50	24.00	54.00
	C-6S	16.50	24.00	54.00
	C-7	13.50	21.00	51.00
1937	DX-4	16.50	24.00	54.00
	DX-5	16.50	24.00	54.00
	DX-6	16.50	24.00	54.00
	D-4	19.50	27.00	57.00
	D-5	21.00	28.50	58.50
	D-6	22.50	30.00	60.00
	D-6S	22.50	30.00	60.00
	D-7	22.50	30.00	60.00
1938	EX-4	22.50	30.00	39.00
	EX-6	25.50	33.00	42.00
	EL-5	30.00	37.50	46.50
	EL-6	30.00	37.50	46.50
	EL-7	33.00	40.50	49.50
	E-4	28.50	36.00	45.00
	E-5	30.00	37.50	46.50
	E-6	30.00	37.50	46.50
	E-7	33.00	40.50	49.50

FRIGIDAIRE

1927–8	M-52	$13.50	$21.00	$51.00
	M-5	13.50	21.00	51.00
	M-7	15.00	22.50	52.50
	M-9	15.00	22.50	52.50
	M-12	24.00	31.50	61.50
	M-15	37.50	45.00	75.00
1929	V-4E	13.50	21.00	51.00
	V-4P	13.50	21.00	51.00
	V-5E	13.50	21.00	51.00
	V-5P	13.50	21.00	51.00
	D-4	16.50	24.00	54.00
	D-5	19.50	27.00	57.00
	D-6	19.50	27.00	57.00
	D-7-2	19.50	27.00	57.00
	D-9	27.00	34.50	64.50
	D-12	37.50	45.00	75.00
	AP-4	16.50	24.00	54.00
	AP-5	19.50	27.00	57.00
	AP-6	19.50	27.00	57.00
	AP-7-1	22.50	30.00	60.00
	AP-7-2	22.50	30.00	60.00
	AP-9	27.00	34.50	64.50
	AP-12	37.50	45.00	75.00
	AP-18	61.50	69.00	99.00
1930	G-3	15.00	22.50	52.50
	G-4	15.00	22.50	52.50
	G-5	18.00	25.50	55.50
	G-6	21.00	28.50	58.50
	MC-9	22.50	30.00	60.00
	MC-12	37.50	45.00	75.00
1931–2	ML-4	22.50	30.00	60.00
	ML-5	24.00	31.50	61.50
	ML-6	28.50	36.00	66.00
	S-4	22.50	30.00	60.00
	S-5	24.00	31.50	61.50
	S-6	28.50	36.00	66.00
	W-3	22.50	30.00	60.00
	W-4	24.00	31.50	61.50
	W-5	25.50	33.00	63.00
	W-6	28.50	36.00	66.00
	W-8	33.00	40.50	70.50
	W-10	42.00	49.50	79.50
	W-12	60.00	67.50	97.50
	W-18	82.50	90.00	120.00
	WP-4	24.00	31.50	61.50
	WP-5	25.50	33.00	63.00
	WP-6	28.50	36.00	66.00
	WP-7	30.00	37.50	67.50
	WP-8	33.00	40.50	70.50
	WP-10	42.00	49.50	79.50
	WP-13	60.00	67.50	97.50
	WP-18	82.50	90.00	120.00

FRIGIDAIRE—Continued

Year	Model	Price A*	Price B*	Price C*
1933	Std-43	$13.50	$21.00	$78.00
	Std-63	15.00	22.50	79.50
	SL-43	31.50	39.00	69.00
	SL-63	36.00	43.50	73.50
	SL-73	37.50	45.00	75.00
	Sup-43	33.00	40.50	70.50
	Sup-63	39.00	46.50	76.50
	Sup-73	42.00	49.50	79.50
	Sup-93	52.50	60.00	90.00
	Sup-123	67.50	75.00	105.00
	Sup-153	82.50	90.00	120.00
	WP-18	82.50	90.00	120.00
1934	Std-434	13.50	21.00	78.00
	Std-534	15.00	22.50	79.50
	Std-634	16.50	24.00	81.00
	M-434	36.00	43.50	73.50
	M-634	40.50	48.00	78.00
	M-834	48.00	55.50	85.50
	Sup-434	40.50	48.00	78.00
	Sup-634	48.00	55.50	85.50
	Sup-734	52.50	60.00	90.00
	Sup-934	61.50	69.00	99.00
	Sup-1234	76.50	84.00	114.00
	Sup-1534	99.00	106.50	136.50
	Del-1234	82.50	90.00	120.00
	Del-1534	105.00	112.50	142.50
	WP-1834	112.50	120.00	150.00
1935	Std-435	19.50	27.00	84.00
	Std-535	22.50	30.00	87.00
	Std-635	25.50	33.00	90.00
	M-435	40.50	48.00	78.00
	M-535	46.50	54.00	84.00
	M-635	49.50	57.00	87.00
	M-835	58.50	66.00	96.00
	Sup-535	54.00	61.50	91.50
	Sup-635	58.50	66.00	96.00
	Sup-735	64.50	72.00	102.90
	Sup-935	72.00	79.50	109.50
	Sup-1235	87.00	94.50	124.50
	Sup-1535	109.50	117.00	147.00
	WP-1835	120.00	127.50	157.50
	Del-1235	93.00	100.50	130.50
	Del-1535	115.50	123.00	153.00
1936	D-3-36	30.00	37.50	67.50
	DRS-5-36	51.00	58.50	88.50
	DRS-6-36	54.00	61.50	91.50
	M-4-36	51.00	58.50	88.50
	M-5-36	57.00	64.50	94.50
	M-6-36	61.50	69.00	99.00
	M-7-36	67.50	75.00	105.00
	Sup-4-36	60.00	67.50	97.50
	Sup-5-36	67.50	75.00	105.00
	Sup-6-36	73.50	81.00	111.00
	Sup-7-36	79.50	87.00	117.00
	Sup-9-36	91.50	99.00	129.00
1936	WP-12-36	111.00	118.50	148.50
	WP-15-36	132.00	139.50	169.50
	Premier	112.50	120.00	150.00
	Imperial	132.00	139.50	169.50
1937	D-3-37	52.50	60.00	80.15
	DRS-5-37	64.50	72.00	102.00
	DRS-6-37	67.50	75.00	105.00
	DRS-7-37	75.00	82.50	112.50
	M-4-37	61.50	69.00	97.65
	M-5-37	69.00	76.50	106.50
	M-6-37	73.50	81.00	111.00
	M-7-37	79.50	87.00	117.00
	M-8-37	90.00	97.50	127.50
	Del-5-37	79.50	87.00	117.00
	Del-6-37	91.50	99.00	129.00
	Del-7-37	99.00	106.50	136.50
	Del-8-37	105.00	112.50	142.50
	Imp-37	150.00	157.50	187.50

*** Price "A" in these tables is the maximum sale price of "as is" refrigerators. Price "B" unreconditioned refrigerators, and price "C" reconditioned refrigerators.**

FRIGIDAIRE—Continued

Year	Model	Price A*	Price B*	Price C*
1938	D-3	$61.50	$69.00	$78.00
	Sp-5-38	70.50	78.00	87.00
	Sp-6-38	73.50	81.00	90.00
	Sp-7-38	79.50	87.00	96.00
	M-4-38	70.50	78.00	87.00
	M-5-38	79.50	87.00	96.00
	M-6-38	85.50	93.00	102.00
	M-7-38	93.00	100.50	109.50
	M-8-38	103.50	111.00	120.00
	Del-5-38	93.00	100.50	109.50
	Del-6-38	103.50	111.00	120.00
	Del-7-38	112.50	120.00	129.00
	Del-8-38	118.50	126.00	135.00
	Imp	172.50	180.00	189.00
1939	TDA-3	67.50	75.00	84.00
	SupV-6-39	79.50	87.00	96.00
	DA-3	67.50	75.00	83.65
	DA-4	73.50	81.00	90.00
	Sp-5-39	79.50	87.00	96.00
	Sp-6-39	84.00	91.50	100.50
	M-4-39	79.50	87.00	96.00
	M-5-39	91.50	99.00	108.00
	M-6-39	97.50	105.00	114.00
	M-8-39	117.00	124.50	133.50
	CW-5-39	115.50	123.00	132.00
	CW-6-39	124.50	132.00	141.00
	CW-8-39	145.50	153.00	162.00
	CWI-6-39	130.50	138.00	147.00
	CWI-8-39	150.00	157.50	166.50
	CWI	202.50	210.00	219.00
	WP-19	277.50	285.00	294.00
1940	TDB-3	73.50	81.00	90.00
	SV-3	73.50	81.00	82.60
	SV-4	82.50	82.60	82.60
	SV-56	78.93	78.93	78.93
	SV-6-40	89.25	89.25	89.25
	SVE-6-40	92.75	92.75	92.75
	SVP-6-40	103.50	110.25	110.25
	SV-8-40	106.50	114.00	116.73
	SVE-8-40	108.00	115.50	120.23
	M-5-40	102.00	103.25	103.25
	M-6-40	109.50	110.25	110.25
	M-8-40	132.00	137.55	137.55
	D-5-40	105.00	112.50	120.40
	D-6-40	112.50	120.00	129.00
	CWM-5-40	116.90	116.90	116.90
	CWM-6-40	127.40	127.40	127.40
	CWD-6-40	141.00	148.40	148.40
	CWD-8-40	153.00	160.50	169.50
	CWI-6-40	154.50	162.00	165.55
	CWI-8-40	165.00	172.50	181.50
	CWI-13	247.50	255.00	264.00

GENERAL ELECTRIC

1928	S-3	$12.00	$19.50	$49.50
	S-5	12.00	19.50	49.50
	P-4	12.00	19.50	49.50
	P-5	13.50	21.00	51.00
	P-7	13.50	21.00	51.00
	R-5	13.50	21.00	51.00
	RT-5	13.50	21.00	51.00
	RT-7	13.50	21.00	51.00
	RS-5	13.50	21.00	51.00
	RL-95	13.50	21.00	51.00
	PL-95	13.50	21.00	51.00
	PL-13	19.50	27.00	57.00
	PL-17	25.50	33.00	63.00
	DX-75	13.50	21.00	51.00
	DX-10	13.50	21.00	51.00
	DX-14	19.50	27.00	57.00
	DX-18	27.00	34.50	64.50
1929	P-4	12.00	19.50	49.50
	P-5	13.50	21.00	51.00
	P-7	13.50	21.00	51.00
	G-35	16.50	24.00	54.00
	G-40	16.50	24.00	54.00
	G-55	19.50	27.00	57.00
	G-75	19.50	27.00	57.00
	G-100	27.00	34.50	64.50

GENERAL ELECTRIC—Continued

Year	Model	Price A*	Price B*	Price C*
	G-135	$30.00	$37.50	$67.50
	G-175	40.50	48.00	78.00
	PL-95	13.50	21.00	51.00
	PL-13	19.50	27.00	57.00
	PL-17	25.50	33.00	63.00
	RT-5	13.50	21.00	51.00
	RT-7	13.50	21.00	51.00
	R-5	13.50	21.00	51.00
	RL-95	13.50	21.00	51.00
	DX-75	13.50	21.00	51.00
	DX-10	13.50	21.00	51.00
	DX-14	19.50	27.00	57.00
	DX-18	27.00	34.50	64.50
1930	G-35	16.50	24.00	54.00
	G-40	16.50	24.00	54.00
	G-55	19.50	27.00	57.00
	G-75	19.50	27.00	57.00
	G-100	27.00	34.50	64.50
	G-135	30.00	37.50	67.50
	S-42	16.50	24.00	54.00
	S-62	21.00	28.50	58.50
	S-100	27.00	34.50	64.50
	S-140	33.00	40.50	70.50
	S-180	45.00	52.50	82.50
	P-4	12.00	19.50	49.50
	P-5	13.50	21.00	51.00
	P-7	13.50	21.00	51.00
	PS-95	13.50	21.00	51.00
	PS-13	30.00	37.50	67.50
1931	S-42	16.50	24.00	54.00
	S-62	21.00	28.50	58.50
	S-82	24.00	31.50	61.50
	S-100	27.00	34.50	64.50
	S-140	33.00	40.50	70.50
	S-180	45.00	52.50	82.50
	SS-42	18.00	25.50	55.50
	SS-62	22.50	30.00	60.00
	SS-82	27.00	34.50	64.50
	SS-100	31.50	39.00	69.00
	SS-140	37.50	45.00	75.00
	SS-180	52.50	60.00	90.00
	PS-5	25.50	33.00	63.00
	PS-6	27.00	34.50	64.50
	PS-7	28.50	36.00	66.00
	PS-9	31.50	39.00	69.00
	PS-13	30.00	37.50	67.50
	PS-17	52.50	60.00	90.00
1932	SS-42	18.00	25.50	55.50
	SS-44	18.00	25.50	55.50
	SS-62	22.50	30.00	60.00
	SS-67	24.00	31.50	61.50
	SS-85	28.50	36.00	66.00
	SS-107	34.50	42.00	72.00
	SS-140	37.50	45.00	75.00
	SS-182	55.50	63.00	93.00
	E-4	12.00	19.50	49.50
	E-5	12.00	19.50	49.50
	PS-45	22.50	30.00	60.00
	PS-5	25.50	33.00	63.00
	PS-55	27.00	34.50	64.50
	PS-63	30.00	37.50	67.50
	PS-95	13.50	21.00	51.00
	PS-13	30.00	37.50	67.50
	PS-17	52.50	60.00	90.00
1933	HE-4-A	19.50	27.00	57.00
	HE-5	21.00	28.50	58.50
	HE-7	22.50	30.00	60.00
	SS-44	18.00	25.50	55.50
	SS-63	22.50	30.00	60.00
	SS-67	24.00	31.50	61.50
	SS-85	28.50	36.00	66.00
	SS-107	34.50	42.00	72.00
	SS-146	49.50	57.00	87.00

*** Price "A" in these tables is the maximum sale price of "as is" refrigerators. Price "B" unreconditioned refrigerators, and price "C" reconditioned refrigerators.**

(Continued on page 29)

From Beef on the Hoof to Chops in the Refrigerator

—that's the curriculum of the Camp Lee, Va., Refrigeration School

CAMP LEE, VA.—One of the tricks the Byzantine emperors used to impress representatives of neighboring rulers was to serve them fruit, fish and other perishables which had been brought by swift runners from places hundreds of miles away, in snow-packed containers.

That was refrigeration.

Today the Quartermaster Corps also transport perishable foods hundreds and even thousands of miles—not to impress any one, but simply to keep American soldiers healthy.

Refrigeration is still the answer to the problem, just as it was hundreds of years ago, but what a difference! Not packed snow, but mechanical refrigeration now keeps tons of meat, fruit, vegetables, and dairy products fresh and tasty for daily consumption by American soldiers in all quarters of the globe. Training men for the gigantic organization whose far-flung units make this miracle a daily commonplace is the job of the Refrigeration School at Camp Lee's QMRTC.

Head of the school, under the direct authority of Col. John Rowan, Director of Supply Training, is Captain Allan N. Johanneson. The curriculum, worked out by Capt. Johanneson, represents the most recent development of a science which has been completely revolutionized since the last war.

Training

Trainees at the school study two main phases: subsistence, which concerns the storage and issue of perishables; and refrigeration mechanics, which concerns the operation and maintenance of refrigeration machinery. These two phases divide the course in half, and each week is planned as far as possible in an independent unit so that trainees may enter the course at any time.

Like all the technical schools at the QMRTC, the refrigeration school brings the trainee into direct contact with the practical problems he will have to face when he is assigned to his permanent unit. There is considerable laboratory work, in which the trainees actually operate refrigeration equipment disassemble and assemble compressors, weld broken parts. There are trips to large cold storage plants in the neighborhood. Lectures and explanations are accompanied by numerous visual training aids such as charts, cut-away sections of machinery, models, etc. For example, one model of a storage tent demonstrates how food can be kept cool, when refrigeration equipment is lacking, as might be the case in a campaign, by allowing water to soak up the sides of the tent from trenches all around it, thus causing evaporation and consequent cooling of the air inside.

Both the curriculum and training methods, however, are flexible, as benefits a new and rapidly developing field. A large wooden box hangs near the door, with a slot in the top, and labelled "Suggestions." Trainees are encouraged to contribute to this box.

Mobile Units

The mobile unit, a necessary feature of supply in modern warfare, has been developed in Refrigeration, as in other branches of the Quartermaster Corps. Although there is not a mobile refrigeration unit at present at Camp Lee, trainees acquaint themselves with their operation, and several such units, now operating with American troops in the field, are manned by Camp Lee soldiers.

The normal refrigeration unit is the company, which consists of a butchers' platoon, a cold storage platoon, a refrigeration platoon, and attached veterinary personnel, in addition to the administrative personnel. The Refrigeration School at Camp Lee trains

men primarily for the second and third of these units, which correspond to the two phases of the curriculum already described.

Equipment used at the school would puzzle anyone for whom refrigeration evokes an image of frosted coils and complicated "Rube Goldberg" mechanisms. There are coils and machines, to be sure, but comparatively small and unimpressive. The fact is that much of the equipment used for training has been improvised. One amazing contrivance, the pride and joy of the whole personnel from Captain Johanneson on down, is a nondescript compressor, made entirely from odds and ends. "Whenever we have an extra pressure gauge, or an old water tank, or a fly wheel we don't need," explains Captain Johanneson with ill-concealed glee, "we just fasten it on."

Improvisation in a training school has two big advantages: it encourages the ingenuity and versatility in trainees which is essential to smooth operation in a strenuous campaign, and it releases valuable new equipment for the use of troops in the field. Trainees at Captain Johanneson's school have fashioned for themselves a model ice plant, condensing units, compressors, large and small coolers, to mention only a few.

Need for Trained Personnel

Some idea of the need for trained refrigeration personnel in America's new army can be gained from the fact that to feed 120,000 men, 175 beef cattle must be slaughtered every day that beef is served. This insures 100,000 pounds of dressed meat including 75,000 pounds of boned carcass meat, and 3,500 pounds of edible organs. The 10,000 pounds of hides must be salted, and 21,500 pounds of inedible waste disposed of, usually, by conversion into commercial fertilizer. This requires a larger number of butchers to kill, dress and handle the by-products of beef-cattle. Moreover, the job must be completed within 8 hours. With modern equipment and skilled workers it can be done; otherwise a vastly larger number of men is needed.

Captain Johanneson's staff of instructors is headed by Master Sgt. Anthony DiLorenzo, assisted by Staff Sgt. Elton Mattson, Sgt. William Burgard, Cpl. Thomas Thompson, Jr., and Pfc. Rudy Shubart. Refrigeration mechanics and subsistence men trained by them are already in action all over the world, performing their vital function in the vast machine of supply which keeps America's armed forces rolling.

WAR PRODUCTION BOARD HEAD EMPHASIZES SERVICING

IN an address delivered by Joseph L. Weiner, Deputy Director, Division of Civilian Supply at a meeting of National Retail Dry Goods Association, Chicago on June 15th, Mr. Weiner pointed out that retail business which supplies the immediate needs for civilian living is feeling the anticipations of the war economy rather than the war itself.

Mr. Weiner asked the merchants, "How about servicing the appliances and gadgets which you have placed in so many millions of American homes? That, like the supply of new goods, will be determined both by calculating the requirements of our armed forces and by figuring out, as we are doing, the really essential needs of our civilian population. We shall be able to do more to keep appliances in repair than we can do to get new ones built. But even war factories will have to "patch and pray" to keep their equipment running. Clearly, then, stores and housewives have to show some of the same resourcefulness in keeping their equipment and appliances in repair and running with a minimum of new replacement parts. Sometimes the parts will be available; sometimes they won't. We will try to have functional parts available for cook-stoves and refrigerators; we probably won't be able to do much for power-driven egg beaters or lawn mowers."

* * *

CONSERVATION BRIEFS

—For every ten 30-foot cruisers that aren't being built this year our Navy can have another mosquito boat.

* * *

—The wood in one average civilian house would make two defense houses for war workers and their families.

* * *

—How the beauty parlor goes to war: The iron that used to go into a single hair dryer is enough for six hand grenades.

* * *

—A single minesweeper contains enough lumber to build 20 average civilian homes and an average chair represents the wood needed for an army bunk.

* * *

—There are 80 shots at the enemy in a set of brass curtain fixtures. The metal they contain would produce that many cartridges for a soldier's rifle.

COMMERCIAL

INCREASE BUSINESS BY DOING A MORE EFFECTIVE JOB OF SELLING *Selling*

Service Firm Reorganizes to Meet War Conditions

By Robert Latimer

UNDER the restrictions and problems imposed upon the refrigeration service industry by war conditions, it is going to be necessary for the refrigeration engineer to observe stringent economy in time and methods, according to George W. Mims, president of Frigid Refrigeration Service Company, of New Orleans, Louisiana.

Frigid Refrigeration Service is typical of many large refrigeration firms throughout the country. In business ten years, it has gone through all the familiar phases of business, done a large air conditioning, special installation, parts jobbing, and general trade which has qualified Mr. Mims to foresee the future with more than usual clarity. He has full confidence in the industry to maintain itself during the worst of the war years to come, but by the same token, he believes it will be necessary for every dealer to "hitch up his belt and go to work on the obstacles to making a living as they come up."

The shortage of trained mechanics and service men is going to be one of the worst problems, Mr. Mims points out. "The Army is making many of them maintenance men and engineers," he explained. "The Government, of course, is paying much larger salaries than the individual shop can afford to do, and thus it is actually the refrigeration service engineer's biggest competitor. Naturally, this is necessary to the prosecution of the war, and none of us feel any wrath towards the Army for doing so. However, it is a problem which must be faced, and in the case of most shops means that we must handle more business with less men in the future." Mr. Mims himself has lost a total of ten men from New Orleans in the last six months, local ship yards taking away many, and becoming inviting from a salary standpoint to many more.

Now, although he at one time operated the largest crew of trained service men in the city, consisting of ten veteran men, Mr. Mims is expecting to get by with only three or four—despite the fact that there are twice as many calls as before. "I expect to have to work at it myself," he said with a smile. "Not merely to keep my hand in, but simply because it will be necessary for somebody to take care of old customers." To handle the larger volume of calls which are sure to ensue from longer use of old equipment, and with a smaller crew of

men, Mims is busy "streamlining" his shop to handle as many as possible calls in the least amount of time. Specializing in both commercial and domestic installations, Mr. Mims' business has now grown to substantially all commercial accounts—although he once had from twenty to thirty domestic calls per day. The sealed unit slowed up the domestic market somewhat, a fact for which Mr. Mims feels more than a little bit of thankfulness—for otherwise, there would probably be many more service calls going unanswered than there are at present.

Modern Tools Save Time

"Streamlining" the shop has meant reducing "time-leaks" in every operation in his large shop. Mr. Mims is planning complete rearrangement of every shop facility. and the addition of new equipment and machines wherever it will take a minute or more off a common operation. Included in this new equipment will be a large bath, a new boiler with steam-cleaning attachments for compressors, coils, etc., more electrically operated power tools to replace hand tools, and the mounting of every heavy piece of machinery in the shop on wheels. Until the tire-rationing program began, he had planned to set up several "rolling shops" with all equipment carried in a truck body for making any kind of repairs "on the spot." With a priority rating, it would still be possible for him to obtain tires for a unit of this type, but he feels that by the time the first set had worn out, there would be no more available, and thus the time spent in building the rolling shop would be wasted.

There will be no trouble in keeping customers, Mr. Mims opines, since ten years in business, during which time his service work has been more than satisfactory, has built up a reputation he counts upon heavily. "Our customers actually seem relieved when we tell them we can fix their coolers, boxes, etc." Mr. Mims said. "We found that the public has a much higher appreciation of the defense program than is generally believed, and that they know, as well as we do, the seriousness of the situation."

Mr. Mims has eliminated all advertising, on the logical basis that there are now actually more customers available than there is time to handle them. Formerly using a large amount of illustrated folders, direct mail, newspaper ads, and other methods of promotion, Mims has cut every one of these out altogether. He doesn't feel it necessary to advertise when his men and himself are working steadily until late at night—and thus the war has put a stop to an advertising program which has run continuously for more than six consecutive years.

As to competition in the field, consisting mainly of appliance dealers who will go into refrigeration service as a substitute to keep their stores in operation, Mr. Mims does not believe that this will amount to a great deal. The lack of experienced labor will keep a lot of appliance dealers out, he points out, and stocks of proper equipment for refrigeration repairs will go primarily to refrigeration service firms who have been buying for years. Most appliance dealers will look to such sidelines as furniture, linoleums, paint and wallpaper before considering refrigeration service, he feels certain.

Taking up every aspect of the problem, Mr. Mims has made a final improvement in his shop to guard against the likelihood of power shortages. This is a group of three carbide-operated lamps which will illuminate the shop in the event of power failure. He scoured Arkansas and Mississippi to find these, but feels the effort worthwhile in the light of saving future time.

— The largest single plant in the War Production Drive is the Newport News Shipbuilding and Drydock Co., employing 27,000 men; the smallest is the Armstrong Manufacturing Co. plant at Portland, Ore., which employs 19.

• • •

— If you find electric fans are scarce this summer, consider that the copper from a dozen such fans is enough to provide all the copper needed in fabricating a 20 mm aircraft cannon to make it hot for the Japs and Nazis.

• • •

— The steel that goes into a single sewing machine will make a high explosive shell for a 75 mm field howitzer and the steel in two large outboard motors would make a sub machine gun with which our soldiers could shoot down Japs.

Intensive Promotion of "Preventive Service" Is New Sales Campaign

By Herbert Hanley

THAT operation of a refrigeration service business under war conditions is going to require entirely different methods is now more than plain to every service engineer. An excellent example is the Jennings Refrigeration Service Company, which recently developed an outstanding program of "merchandising preventive service" built around a direct mail follow-up of thousands of people who must use their refrigerators for many more years than usual.

The Jennings concern, headed by veteran service man J. E. Jennings, has recently emerged from a wholesale remodeling and relocating of its shops which included the outright purchase of the large refinishing and refrigeration overhaul shops of New Orleans' local Frigidaire office. Prior to this change, the company split its work almost equally between domestic and commercial refrigeration, serving store owners, air conditioning users, frosted food cabinets, hotels and other large-scale users. Now, with the emphasis decidedly on home refrigerators, Jennings Refrigeration Service has swung over to the domestic field almost 100%—and is "selling" the idea of completely overhauling and refinishing domestic boxes NOW, in advance of the time when such work becomes an emergency.

Let Forrest Clupper, service manager, who recently came to Jennings from a post with Frigidaire's repair department, tell the story. "We believe that the average housewife of today has heard so much with regard to shortages and the lack of manpower that she will jump at the chance to put her refrigerator in perfect operating condition long before anything actually goes wrong with it—particularly those with refrigerators more than five years old, which may require work almost immediately. Consequently, our merchandising program will be built around telling New Orleans housewives that we will put their refrigerators in tip top shape at once, while parts and service men are available, at a flat price, guaranteeing every job, and standing behind it for the duration of the war. We have found that every woman thus approached is willing to give the matter a lot of thought, and that when she goes to her husband with the suggestion, he is most likely to tell her to go ahead and have the work done when she wants to."

Thus, with the facilities of the former Frigidaire shop set up for "mass production" of from ten to fifteen refrigerators a day if possible, and a crew of five outside service men and two shop men which will be doubled as fast as the qualified refrigeration men can be obtained, Jennings Refrigeration Service is prepared to do a selling and educational job as well as service. "Prospects" have been obtained in the easiest possible manner—a complete list of approximately 24,000 Frigidaires operating in the city which is furnished the company as an authorized Frigidaire service firm. With this list furnishing a field which will take several years to exhaust, Jennings is going to contact each owner of a box built prior to 1936 on the idea of allowing a service man to inspect it, and make recommendations for putting it in order, or a complete overhaul if this seems necessary.

"We are going to stick to boxes built before the sealed unit came in during 1936," Mr. Clupper stated. "We will accept only a few sealed units if necessary; simply because larger profits are possible with the older jobs. There are enough such customers in the 24,000 mentioned to make up a complete market while disregarding sealed units, and we plan to specialize in this way."

Used to follow up the list will be a "personalized" direct mail letter developed by Mr. Jennings, which personally addressed and signed, will go to the owner of every refrigerator pointing out that the war means that it will have to serve years longer, and that it will be wise to guard against complete failure by having it serviced now. These will be sent out every three months to specific neighborhoods, and in limited amounts (this to prevent swamping the company with business, of course).

Two days following receipt of the letter, the customer will be followed up by a telephone call—when Jennings Refrigeration Service asks whether she read its letter, and for her opinion. Further explanation is made, with an offer to come out and examine her box without obligation. Finally, a week later a salesman-serviceman will call on the home to make a final attempt to secure the business. Naturally, neither of the last two steps will be taken if the customer responds to the letter.

Where the plan succeeds, a transfer company truck will call the same day for the box, leaving a "loaner" refrigerator supplied by Mr. Clupper to serve until the original is returned. The "loanout" model is equipped with wheels and handles, and can be quickly rolled in and out of the home. "We're solving the tire problem by contracting all haulage to the transfer company." Mr. Clupper said. "Although this is a bit expensive it takes tire and motor maintenance worries out of the picture, and gives us equally good service." Incidentally the truck makes no empty runs, always taking out one box for each brought in.

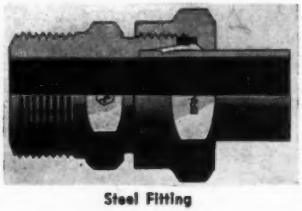
The work includes completely tearing down mechanism, polishing of trays and shelves, new gaskets where these are available, and a complete refinishing of the exterior. "We give out no new parts without taking one in to replace it," Mr. Clupper said. "And we plan to rebuild parts steadily to keep our inventory up." For a complete overhaul, prices on a 6-foot box will run upwards of $30, and for larger units, up to $40 and $45. The average is expected to be around $35, inasmuch as all except porcelain boxes will need to be refinished. All equipment in the shops is portable, boxes are moved around on wheeled cabinets, and the entire shop is "streamlined" to turn out this work as rapidly as possible. "Our worst problem of course is labor," Mr. Clupper summed up. "We think we can maintain parts well enough—but we are having a lot of trouble in securing enough qualified men to support the volume of work we expect to obtain."

S S S

ERMETO STEEL FITTINGS

A SAFETY fitting suited for use with tubing of all metals, and particularly advantageous for use on hard-to-work metals is now being placed on the market by The Weatherhead Company, Cleveland, Ohio.

On this new fitting, known as the Ermeto Safety Fitting, the cutting edge of a hardened ring shears a groove into the outer surface of the tube. The resulting leak-



Steel Fitting

proof joint cannot be pulled apart and holds beyond the burst strength of the tube itself. No flaring, threading, soldering or welding is necessary. Connections made with Ermeto Fittings may be taken apart easily and remade without affecting the tightness of the joint.

Ermeto Fittings made from steel are ideal for high-pressure applications in aviation, machine-tool, petroleum, oil-refining, refrigeration, plumbing, automotive railroad, and numerous others industries and are available as nipples, connectors, unions, elbows, tees and sleeves for tube diameters of from ⅛" to 1½" O.D.

S S S

One electric dry shaver will keep one man well-groomed, but the copper in a hundred electric dry shavers would make a smoke tank for an airplane—a smoke tank which, by throwing a screen around a fighting ship, might save many American lives.

The Question Box

Readers are invited to send their problems pertaining to the servicing of household refrigerators and small commercial refrigerating equipment to "The Question Box."

WHY METAL GASKETS WERE CHANGED

QUESTION 491: In 1936 a number of Universal compressor units were sold around here. The sizes were about ⅓ and ½ hp. units with Methyl gas being used. It seemed that they were put in with the understanding that they would service them for a year and while doing this, they changed a number of compressor head gaskets. I was not able to locate anything wrong with the old metal gaskets taken out and I'm wondering why these changes were made. Some of the old gaskets are hanging by the compressors yet, the owners kept them for further use. They were not able to tell me why they changed them.

A compressor using M.C. gas and located in a warm place runs a long time but it has lost its gas a few times. I am unable to find the leak and it seems to happen while defrosting the cabinet. This is a ⅓ hp. unit. I recharged it and it operates all right but sometimes it kicks out the overload on the control, but then on cooling down, it operates again for a long time. On these long operating periods I have seen the head pressure go up to 175 lbs. and higher but the discharge pipe was so hot I could barely hold it and I placed this head pressure on the high temperature.

I have been unable to find the cause of this, but I do know the load on the compressor is about all it wants to handle. It is about 5 or 6 years old and has seen hard service as it's located in a kitchen in a hotel where in Summertime it gets service and the heat from the hot kitchen.

ANSWER: I don't know of any specific reason why Universal changed gaskets in their compressors. We have no information on hand which indicates that a general change was made at any particular time. There are, however, two possible reasons for this change on a Methyl Chloride system.

The first one is that the gasket may have been aluminum and as you probably know, aluminum cannot be used in a system charged with Methyl Chloride. There is a reaction between aluminum and Methyl Chloride setting up a condition which may become explosive. In the past there have been gaskets made of aluminum or aluminum alloys but they should not have been employed in systems charged with Methyl Chloride.

Another possibility is that the gaskets were made of lead and it has been found that lead gaskets have a tendency to creep or, in other words, as the cast iron of the cylinder block and cylinder head expands with the heat, it tends to force the gasket out around the edges. Then when the compressor cools, a contraction takes place and the head of the compressor will be loose so that the refrigerant may leak out.

Lead gaskets were used in cylinder heads some years ago but were eventually discarded because of the frequent trouble experienced with leaks around the head of the compressor.

This may explain the reason why the one-third horse power compressor you describe leaks refrigerant when it is being defrosted. It is probable that during the defrosting period the compressor is permitted to cool to a lower temperature than at any other time and it may be that the gaskets permit a certain amount of leakage at that time.

Another possibility of leakage in this case is that when the system is shut down for defrosting, the pressure on the crankcase naturally increases far above normal operating pressures. If your seal is not holding perfectly it is possible that leakage will occur during the shut down period but would not occur while the machine is in normal operation.

The high head pressure could be due to an overload on the compressor, to air in the system or to a dirty condenser and by this I mean not only the outside of the condenser but it is possible that there is a carbon formation on the inside which will act as an insulator. Too much tension on the discharge valves can also cause excessive heat and high head pressures.

IDEAL BOTTLE COOLER

QUESTION 492: I am having difficulty with an Ideal Bottle Beer Cooling Box 8 feet in length. Its number is 1326 and is refrigerated with a Chieftain ⅓ hp. compressor No. M132L2R and a thermal expansion valve with Methyl Chloride as the refrigerant.

This box runs for a spell of 5 to 10 minutes and then it seems that an overload happens within the compressor. The motor protector relay, which is self-resetting, kicks off. After a minute or two the motor starts again, repeating the trouble. At first I thought that the trouble was a stuck open thermostatic valve. Therefore, I installed a new Detroit Valve with the same results. The head pressure never goes over 100 lbs. and the back pressure hangs around 20 to 25 lbs. There is about 1¼" of oil in the compressor body which I think would be sufficient to properly lubricate it. The suction line at the compressor is cool and once in a while there will be a knock in the compressor for a few seconds like oil pumping.

I have tried to give all the information that I can think of so that you may be able to assist me in putting my finger on the seat of the trouble, without having to guess at what could cause it, namely the compressor, the motor, etc.

One more thing, the compressor pulls a vacuum of around 26 inches with 90 lbs. heads pressure after shutting off the suction line.

ANSWER: The Thermostatic Expansion Valve is open too widely, allowing the refrigerant to slug back to the compressor. The Expansion Valve must be closed sufficiently to adjust the back pressure setting to a range of from 18 lbs. to 20 lbs.

MOLDY AND SLIMY MEAT

QUESTION 493: I am servicing a slaughter house storage system, and the trouble is moisture and moldy meat. I installed this cooler last Fall and it worked fine until cold weather set in. Then we had our trouble with coils defrosting between cycles in the storage room. They did not build drip pans until the coils defrosted several times. Drip pans have been in the cooler for three weeks but still the meat is moist and not as firm as should be.

Temperatures 4" from the floor are 33° and at the ceiling 35°. The unit stays off for about 3 or 4 hours at a time with a temperature change of only 5°. The meat is left in the chilling room until thoroughly cooled through. The walls are all outside walls except where the weighing room protects it on the west side. Steam is used for cleaning the slaughter house floors and other equipment.

We can pull a temperature of 0° or lower easy enough in the storage room. The coils are 1¼" ammonia pipe and we are not frosting all of the coil to hold temperature.

Why do we have such a high humidity in this cooler?

ANSWER: Apparently your present troubles began when the heavier loads of the Summer were taken off the machine and due to the lower outdoor temperature the machine was permitted to remain idle for a greater length of time between cycles. This indicates that if the machine is made to operate more often a circulation of air is maintained in the refrigerator due to natural circulation through the refrigerating coils.

When the machine is idle for a greater length of time, the air becomes stagnant in the refrigerator and there is not sufficient circulation to prevent moisture condensing on the meat. This stagnation will also cause molding of the meat itself.

Poor Air Circulation

All this is logical because the condition you have is nearly always caused by poor air circulation. Therefore, I would suggest that you secure a circulating fan which should be installed in the refrigerator and which operates continuously or intermittently on cycles of two to three minutes.

There is a fan manufactured for just this type of circulation, and if you will refer to your last issue of THE REFRIGERATION SERVICE ENGINEER, you will find an advertisement on Page 88 by the Reynolds Electric Company of Chicago. These people manufacture a fan designed especially for the difficulties you are experiencing. This fan is further described on Page 47 of the January issue under the heading of "Circulator Dries Up Wet Refrigerators."

As an additional protection you might also consider one of the new violet ray lamps, one of which is known as the Sperti lamp, designed to kill bacteria in the refrigerator.

S S S

—It is expected that refrigeration manufacturers and wholesalers will require the return of an old part for the purchase of a new one, to salvage critical materials.

UNBALANCED SYSTEM

QUESTION 499: In a local meat market we have the following condition: Two 10 foot display cases and one walk-in cooler are all connected to one F-12 condensing outfit. The walk-in cooler is equipped with a low side float valve and cooling coils while the display cases are equipped with thermostatic expansion valves. We find that the coils in the walk-in cooler defrost with every cycle while the display cases defrost but very little, and soon build up a heavy coating of ice on practically the entire coil.

The temperature in the display cases is held at 42° while the walk-in cooler temperature averages 45°. Whenever the condensing outfit is in operation the F-12 in the boiler with the low side float boils violently. May I ask if we were to install a two-temperature snap-action valve in the suction line from the display cases, would it then be possible to keep the walk-in cooler with float valve at 38° by adjusting the low pressure control on the condensing outfit and also keep the display cases at 38° by adjusting the snap-action valve at the same time defrosting the coils in each cycle. The low pressure control is now set at 10 pounds cut out and 31 pounds cut in and the best temperature that we can obtain in the display cases is 42°.

ANSWER: I, too, believe that your best remedy for the trouble you are having with the two ten-foot display cases and one walk-in cooler would be to install a snap-action, two-temperature valve in the return line of the display cases. Of course a solenoid and thermostat combination installed in the liquid line in this case will do the same thing.

Also, I think it may be necessary to change the pressure control setting so that you have less differential. I would not make this change immediately but after the snap-action valve is installed you may find it advisable to reduce the differential so that the cut out pressure is ten pounds and the cut in pressure is twenty-five pounds instead of thirty-one pounds as it now is. You will undoubtedly secure much better temperature conditions in all three fixtures after this work is done.

OPA USED HOUSEHOLD REFRIGERATOR CEILING PRICES

(Continued from page 20)

GENERAL ELECTRIC—Continued

YEAR	MODEL	PRICE A*	PRICE B*	PRICE C*
	SS-182	$55.50	$63.00	$93.00
	P-44	18.00	25.50	55.50
	P-55	19.50	27.00	57.00
	P-62	22.50	30.00	60.00
	P-67	24.00	31.50	61.50
	P-85	28.50	36.00	66.00
	P-110	36.00	43.50	73.50
	P-134	48.00	55.50	85.50
	P-170	58.50	66.00	96.00
	P-4-180	82.50	90.00	120.00
	PS-45	22.50	30.00	60.00
	PS-5	25.50	33.00	63.00
	PS-55	27.00	34.50	64.50
	PS-63	30.00	37.50	67.50
	PS-95	13.50	21.00	51.00
1934	HE-4-B	19.50	27.00	57.00
	HE-5	21.00	28.50	58.50
	HE-7	22.50	30.00	60.00
	F-4	28.50	36.00	66.00
	F-5	33.00	40.50	70.50
	F-7	34.50	42.00	72.00
	SS-107	34.50	42.00	72.00
	SS-146	49.50	57.00	87.00
	SS-182	55.50	63.00	93.00
	HX-47	22.50	30.00	60.00
	HT-47	22.50	30.00	60.00
	HT-70	25.50	33.00	63.00
	T-9	58.50	66.00	96.00

GENERAL ELECTRIC—Continued

YEAR	MODEL	PRICE A*	PRICE B*	PRICE C*
	T-14	$82.50	$90.00	$120.00
	P-110	36.00	43.50	73.50
	PS-45	22.50	30.00	60.00
	PS-5	25.50	33.00	63.00
	PS-55	27.00	34.50	64.50
	PS-63	30.00	37.50	67.50
	PS-95	13.50	21.00	51.00
1935	X-4	22.50	30.00	60.00
	X-5	37.50	45.00	75.00
	X-6	42.00	49.50	79.50
	X-7	46.50	54.00	84.00
	K-4	37.50	45.00	75.00
	K-5	42.00	49.50	79.50
	K-7	46.50	54.00	84.00
	KF-12	87.00	94.50	124.50
	KF-15	109.50	117.00	147.00
	T-5	43.50	51.00	81.00
	T-7	49.50	57.00	87.00
	T-9	58.50	66.00	96.00
	P-134	48.00	55.50	85.50
	P-170	58.50	66.00	96.00
	P-4-180	82.50	90.00	120.00

*** Price "A" in these tables is the maximum sale price of "as is" refrigerators. Price "B" unreconditioned refrigerators, and price "C" reconditioned refrigerators.**

GENERAL ELECTRIC—Continued

Year	Model	Price A*	Price B*	Price C*
	PS-45	$22.50	$30.00	$60.00
	PS-5	25.50	33.00	63.00
	PS-55	27.00	34.50	64.00
	PS-63	30.00	37.50	67.50
	PS-95	13.50	21.00	51.00
1936	M-4	25.50	33.00	63.00
	M-5	57.00	64.50	94.50
	M-6	61.50	69.00	99.00
	M-7	67.50	75.00	105.00
	SM-66	58.50	66.00	96.00
	SMP-66	73.50	81.00	111.00
	NP-6	73.50	81.00	111.00
	V-4	48.00	55.50	85.50
	V-5	51.00	58.50	88.50
	V-7	58,50	66.00	96.00
	TM-7	79.50	87.00	117.00
	TM-9	91.50	99.00	129.00
	K-12	111.00	118.50	148.50
	K-15	132.00	139.50	169.50
1937	JB-5-37	64.50	72.00	102.00
	JB-6-37	67.50	75.00	105.00
	JB-7-37	76.50	84.00	114.00
	B-3-37	54.00	61.50	82.25
	B-4-37	61.50	69.00	99.00
	B-5-37	69.00	76.50	106.50
	B-6-37	73.50	81.00	111.00
	B-7-37	81.00	88.50	118.50
	B-8-37	91.50	99.00	129.00
	M-6-37	75.00	82.50	112.50
	M-8-37	93.00	100.50	130.50
	PB-6-37	91.50	99.00	129.00
	PB-8-37	108.00	115.50	145.50
	K-12	111.00	118.50	148.50
	K-15	132.00	139.50	169.50
1938	JB-5-38	70.50	78.00	87.00
	JB-6-38	73.50	81.00	90.00
	JB-7-38	79.50	87.00	96.00
	B-3-38	60.00	67.50	76.50
	B-4-38	70.50	78.00	87.00
	B-5-38	79.50	87.00	96.00
	B-6-38	85.50	93.00	102.00
	B-7-38	93.00	100.50	109.50
	B-8-38	106.50	114.00	123.00
	PB-5-38	91.50	99.00	108.00
	PB-6-38	103.50	111.00	120.00
	PB-8-38	118.50	126.00	135.00
	PB-12-38	165.00	172.50	181.50
	PB-16-38	195.00	202.50	211.50
1939	LB-6-39	79.50	87.00	96.00
	BY-4-39	73.50	81.00	90.00
	JB-3-39	67.50	75.00	84.00
	JB-4-39	73.50	81.00	90.00
	JB-5-39	79.50	87.00	96.00
	JB-6-39	82.50	90.00	99.00
	B-3-39	67.50	75.00	84.00
	B-5-39	91.50	99.00	108.00
	B-6-39	100.50	108.00	117.00
	B-8-39	120.00	127.50	136.50
	PB-5-39	114.00	121.50	130.50
	PB-6-39	124.50	132.00	141.00
	PB-8-39	147.00	154.50	163.50
	PB-12-39	187.50	195.00	204.00
	PB-16-39	217.50	225.00	234.00
1940	B-3	73.50	81.00	85.75
	BY-4	94.50	100.45	100.45
	JB-5-40	95.20	95.20	95.20
	JB-6-40	109.50	114.80	114.80
	LB-6-B	80.33	80.33	80.33
	LB-3-40	75.00	82.50	85.75
	LB-4-40	82.50	87.15	87.15
	LB-6-40	94.33	94.33	94.33
	LB-8-40	115.50	123.00	125.65
	LBH-6-40	104.65	104.65	104.65
	LBH-8-40	121.50	129.00	129.15
	B-5-40	120.00	127.50	132.83
	BH-6-40	123.00	130.50	132.83
	B-6-40	132.00	139.50	146.83
	B-8-40	145.50	153.00	162.00
	PLB-6-40	118.13	118.13	118.13
	PB-5-40	142.50	150.00	150.33
	PB-6-40	154.50	162.00	164.33

GENERAL ELECTRIC—Continued

Year	Model	Price A*	Price B*	Price C*
	PB-8-40	$165.00	$172.50	$181.50
	PB-12-40	232.50	240.00	249.00
	PB-16-40	307.50	315.00	324.00

GIBSON

1931 1932 1933 1934	All Models	$10.50	$18.00	$48.00
1935	B4	13.50	21.00	51.00
	L575	13.50	21.00	51.00
	L705	13.50	21.00	51.00
	L835	13.50	21.00	51.00
	P575	13.50	21.00	51.00
	P705	13.50	21.00	51.00
	P835	13.50	21.00	51.00
1936	S46	18.00	25.50	55.50
	S66	22.50	30.00	60.00
	S86	25.50	33.00	63.00
	GA726	22.50	30.00	60.00
	CB596	25.50	33.00	63.00
	CB696	27.00	34.50	64.50
	CB796	28.50	36.00	66.00
	SD646	25.50	33.00	63.00
	PCB696	27.00	34.50	64.50
	PCB796	30.00	37.50	67.50
1937	S47	22.50	30.00	60.00
	S57	27.00	34.50	64.50
	S67	28.50	36.00	66.00
	S77	30.00	37.50	67.50
	CB587	30.00	37.50	67.50
	CB697	33.00	40.50	70.50
	CB797	36.00	43.50	73.50
	CB867	37.50	45.00	75.00
	PCB587	33.00	40.50	70.50
	PCB697	31.50	39.00	69.00
	PCB797	37.50	45.00	75.00
	PCB867	37.50	45.00	75.00
1938	S48	28.50	36.00	45.00
	S58	30.00	37.50	46.50
	S68	31.50	39.00	48.00
	S78	33.00	40.50	49.50
	S638	31.50	39.00	48.00
	CB588	34.50	42.00	51.00
	CB698	37.50	45.00	54.00
	CB798	40.50	48.00	57.00
	CB868	42.00	49.50	58.50
	PCB588	40.50	48.00	57.00
	PCB698	45.00	52.50	61.50
	PCB798	48.00	55.50	64.50
	PCB868	51.00	58.50	67.50
1939	C69	43.50	51.00	60.00
	CU69	43.50	51.00	60.00
	CF69	45.00	52.50	61.50
	D39	39.00	46.50	55.50
	D49	40.50	48.00	57.00
	D59	43.50	51.00	60.00
	D69	45.00	52.50	61.50
	D79	46.50	54.00	63.00
	E589	46.50	54.00	63.00
	E699	48.00	55.50	64.50
	E799	52.50	60.00	69.00
	PE699	55.50	63.00	72.00
1940	C630	45.00	52.50	61.50
	CU630	52.50	60.00	69.00
	CF630	55.50	63.00	72.00
	A330	45.00	52.50	61.50
	A470	52.50	60.00	69.00
	E550	57.00	64.50	73.50
	E640	63.00	70.50	79.50
	E700	73.50	81.00	90.00
	F680	85.50	93.00	102.00

*** Price "A" in these tables is the maximum sale price of "as is" refrigerators. Price "B" unreconditioned refrigerators, and price "C" reconditioned refrigerators.**

HOT POINT

Year	Model	Price A*	Price B*	Price C*
1933	HP4A	$12.00	$19.50	$49.50
	HP4B	12.00	19.50	49.50
	HP4C	12.00	19.50	49.50
	HP5A	12.00	19.50	49.50
	HP7A	12.00	19.50	49.50
1934	PF4	27.00	34.50	64.50
	PF5	31.50	39.00	69.00
	PF6	33.00	40.50	70.50
1935	A4	37.50	45.00	75.00
	A5	42.00	49.50	79.50
	A7	46.50	54.00	84.00
	AP5	42.00	49.50	79.50
	AP7	46.50	54.00	84.00
	AP12	82.50	90.00	120.00
	AP15	102.00	109.50	139.50
1936	AV43	43.50	51.00	81.00
	AV52	46.50	54.00	84.00
	AV70	52.50	60.00	90.00
	A4	37.50	45.00	75.00
	A5	42.00	49.50	79.50
	A7	46.50	54.00	84.00
	AP5	42.00	49.50	79.50
	AP7	46.50	54.00	84.00
	AP12	82.50	90.00	120.00
	AP15	102.00	109.50	139.50
1937	120EB31	48.00	55.50	74.20
	120EB51	61.50	69.00	99.00
	120EB61	64.50	72.00	102.00
	120EB71	70.50	78.00	108.00
	120EC41	57.00	64.50	89.95
	120EC51	66.00	73.50	103.50
	120EC61	69.00	76.50	106.50
	120EC71	76.50	84.00	114.00
	120EC81	87.00	94.50	124.50
	110ED61	87.00	94.50	124.50
	110E81	102.00	109.50	139.50
	110ED121	135.00	142.50	172.50
	110ED151	165.00	172.50	202.50
1938	120EB32	55.50	63.00	72.00
	120EB52	67.50	75.00	84.00
	120EB62	70.50	78.00	87.00
	120EB72	76.50	84.00	93.00
	120EC42	67.50	75.00	84.00
	120EC52	75.00	82.50	91.50
	120EC62	82.50	90.00	99.00
	120EC72	88.50	96.00	105.00
	120EC82	102.00	109.50	118.50
	110ED52	87.00	94.50	103.50
	110ED62	100.50	108.00	117.00
	110ED82	115.50	123.00	132.00
	110ED122	157.50	165.00	174.00
	110ED162	195.00	202.50	211.50
1939	120EA63	76.50	84.00	93.00
	220EB33	63.00	70.50	79.50
	120EB33	63.00	70.50	79.50
	120EB43	73.50	81.00	90.00
	120EB53	82.50	90.00	99.00
	120EB63	88.50	96.00	105.00
	120EC53	91.50	99.00	108.00
	120EC63	100.50	108.00	117.00
	120EC83	124.50	132.00	141.00
	110ED63	121.50	129.00	138.00
	110ED83	142.50	150.00	159.00
	110ED122	157.50	165.00	174.00
	110ED162	195.00	202.50	211.50
1940	120EA3-40	69.00	76.50	85.50
	120EA4-40	78.00	85.50	87.15
	320EA63	78.00	80.33	80.33
	220EA6-40	93.00	94.33	94.33
	220EA8-40	111.00	118.50	125.65
	120EB3-40	69.00	76.50	85.50
	120EB5-40	94.50	102.00	108.33
	220EB6-40	109.50	115.33	115.33
	120EC5-40	115.50	123.00	132.00
	320EC6-40	118.50	126.00	132.83
	220EC6-40	127.50	135.00	144.00
	220EC8-40	142.50	150.00	159.00
	110ED6-40	141.00	148.50	157.50
	110ED8-40	165.00	172.50	181.50
	110ED140	232.50	240.00	249.00
	110ED240	307.50	315.00	324.00

ICE-O-MATIC

Year	Model	Price A*	Price B*	Price C*
1933	Y-5	$10.50	$18.00	$48.00
	Y-6	10.50	18.00	48.00
	L-53	10.50	18.00	48.00
	L-64	10.50	18.00	48.00
	L-53-T	10.50	18.00	48.00
	P-53	10.50	18.00	48.00
	P-64	10.50	18.00	48.00
	D-72	10.50	18.00	48.00
1934	D-44	10.50	18.00	48.00
	D-55	10.50	18.00	48.00
	D-66	10.50	18.00	48.00
	D-80	10.50	18.00	48.00
	P-66	10.50	18.00	48.00
	P-80	10.50	18.00	48.00
1935	S-354-1	12.00	19.50	49.50
	S-355-1	12.00	19.50	49.50
	S-356-2	12.00	19.50	49.50
	P-3566-2	12.00	19.50	49.50
	P-358-2	12.00	19.50	49.50
1936	D-3641	13.50	21.00	51.00
	D-3651	13.50	21.00	51.00
	D-3662	15.00	22.50	52.50
	D-3682	15.00	22.50	52.50
	P-3662	15.00	22.50	52.50
	P-3682	15.00	22.50	52.50
	P-36122	16.50	24.00	54.00
	P-36152	16.50	24.00	54.00
	P-36192	16.50	24.00	54.00
1937	D-3741	13.50	21.00	51.00
	D-3751	13.50	21.00	51.00
	D-3762	15.00	22.50	52.50
	P-3762	15.00	22.50	52.50
	D-3782	16.50	24.00	54.00
	P-3782	16.50	24.00	54.00
	P-37122	16.50	24.00	54.00
	P-37152	18.00	25.50	55.50
	P-37192	18.00	25.50	55.50
1938–9	D-3941	22.50	30.00	39.00
	D-3951	25.50	33.00	42.00
	D-3961	27.00	34.50	43.50
	D-3962	27.00	34.50	43.50
	D-3982	30.00	37.50	46.50

KELVINATOR

1927–8	L-5-E	$10.50	$18.00	$48.00
	L-5-P	10.50	18.00	48.00
	310	10.50	18.00	48.00
	273	10.50	18.00	48.00
	298	10.50	18.00	48.00
1929	M-4-E	10.50	18.00	48.00
	M-4-P	10.50	18.00	48.00
	M-5-P	10.50	18.00	48.00
	M-6-P	10.50	18.00	48.00
1930	U-4-P	10.50	18.00	48.00
	U-5-P	10.50	18.00	48.00
	U-7-P	10.50	18.00	48.00
	S-4	12.00	19.50	49.50
	S-5	12.00	19.50	49.50
	S-7	13.50	21.00	51.00
	S-9	13.50	21.00	51.00
1931	Y-524	12.00	19.50	49.50
	Y-5	12.00	19.50	49.50
	Y-7	13.50	21.00	51.00
	S-4	12.00	19.50	49.50
	S-5	12.00	19.50	49.50
	S-7	13.50	21.00	51.00
	S-9	13.50	21.00	51.00
	D-6	12.00	19.50	49.50
	D-8	12.00	19.50	49.50
	D-11	16.50	24.00	54.00
	D-14	28.50	36.00	66.00

*** Price "A" in these tables is the maximum sale price of "as is" refrigerators. Price "B" unreconditioned refrigerators, and price "C" reconditioned refrigerators.**

VICTORY

★ ★ ★ *for a Nation at* **WAR!**

Depends upon your individual cooperation with ALL members of your Industry TODAY! As a member of the Refrigeration Industry serving Armed Forces and Public Health you will cooperate best by preventing misuse of present equipment and by buying ONLY parts absolutely essential to proper operation.

A-P DEPENDABLE VALVES, important as they are to the continued efficiency of Refrigeration equipment contain materials highly essential to weapons of War. Refrigeration Service Engineers will help our War effort by buying A-P Valves only AS NEEDED. This is part of OUR Victory effort, and we know the Refrigeration Industry will cooperate.

AUTOMATIC PRODUCTS COMPANY
2454 NORTH THIRTY — SECOND STREET
MILWAUKEE WISCONSIN
Export Dept., 100 Varick St., New York City

AP DEPENDABLE *Refrigerant Valves*

KELVINATOR—Continued

Year	Model	Price A*	Price B*	Price C*
1932	K-4	$19.50	$27.00	$57.00
	K-24	19.50	27.00	57.00
	K-5	21.00	28.50	58.50
	K-6	25.50	33.00	63.00
	K-7	27.00	34.50	64.50
	PK-5	22.50	30.00	60.00
	PK-6	27.00	34.50	64.50
	PK-7	28.50	36.00	66.00
	S-4	12.00	19.50	49.50
	S-5	12.00	19.50	49.50
	S-7	13.50	21.00	51.00
	S-9	13.50	21.00	51.00
	D-6	12.00	19.50	49.50
	D-11	16.50	24.00	54.00
	D-14	28.50	36.00	66.00
1933	R-42-N	27.00	34.50	64.50
	R-42	27.00	34.50	64.50
	R-53	30.00	37.50	67.50
	R-64	31.50	39.00	69.00
	R-75	34.50	42.00	72.00
	K-40-N	28.50	36.00	66.00
	K-40	28.50	36.00	66.00
	K-50	31.50	39.00	69.00
	K-60	33.00	40.50	70.50
	K-80	37.50	45.00	75.00
	PK-40	30.00	37.50	67.50
	PK-50	33.00	40.50	70.50
	PK-60	34.50	42.00	72.00
	PK-70	37.50	45.00	75.00
	PK-80	40.50	48.00	78.00
	D-55	37.50	45.00	75.00
	D-65	42.00	49.50	79.50
	D-75	46.50	54.00	84.00
	D-90	51.00	58.50	88.50
	D-120	67.50	75.00	105.00
	D-150	82.50	90.00	120.00
1934	V	33.00	40.50	70.50
	N	33.00	40.50	70.50
	A-5	33.00	40.50	70.50
	NA	36.00	43.50	73.10
	NB	39.00	46.50	76.50
	SA	39.00	46.50	76.50
	SB	42.00	49.50	79.50
	SC	45.00	52.50	82.50
	PA	43.50	51.00	81.00
	PB	48.00	55.50	85.50
	PC	52.50	60.00	90.00
	PD	60.00	67.50	97.50
	D-2	51.00	58.50	88.50
	D-3	57.00	64.50	94.50
	D-4	63.00	70.50	100.50
	D-5	85.50	93.00	123.00
1935	KX-300	36.00	43.50	73.50
	K-425	39.00	46.50	76.50
	K-485	40.50	48.00	78.00
	K-541	43.50	51.00	81.00
	K-650	49.50	57.00	87.00
	K-760	55.50	63.00	93.00
	P-541	45.00	52.50	82.50
	P-650	51.00	58.50	88.50
	P-760	58.50	66.00	96.00
	D-513	55.50	63.00	93.00
	D-617	58.50	66.00	96.00
	D-736	64.50	72.00	102.00
	D-873	72.00	79.50	109.50
	SD-658	61.50	69.00	99.00
	SD-782	67.50	75.00	105.00
	SD-903	75.00	82.50	112.50
	SD-1268	94.50	102.00	132.00
1936	KR-3-36	30.00	37.50	67.50
	KR-4-36	40.50	48.00	78.00
	KR-5-36	51.00	58.50	88.50
	KS-5-36	51.00	58.50	88.50
	KS-6-36	54.00	61.50	91.50
	K-3-36	30.00	37.50	67.50
	K-4-36	51.00	58.50	88.50
	K-5-36	57.00	64.50	94.50
	K-6-36	61.50	69.00	99.00
	K-7-36	67.50	75.00	105.00
	PK-5-36	67.50	75.00	105.00
	PK-6-36	73.50	81.00	111.00
	PK-7-36	81.00	88.50	118.50

KELVINATOR—Continued

Year	Model	Price A*	Price B*	Price C*
	SD-7-36	$84.00	$91.50	$121.50
	SD-9-36	94.50	102.00	132.00
	SD-13-36	132.00	139.50	169.50
	SD-17-36	157.50	165.00	195.00
1937	KS-50	64.50	72.00	102.00
	KS-60	67.50	75.00	105.00
	KS-70	75.00	82.50	112.50
	K-3-37	52.50	60.00	80.15
	K-4-37	61.50	69.00	97.97
	K-5-37	69.00	76.50	106.50
	K-6-37	73.50	81.00	111.00
	K-7-37	81.00	88.50	118.50
	PK-5-37	79.50	87.00	117.00
	PK-6-37	91.50	99.00	129.00
	PK-7-37	99.00	106.50	136.50
	PK-9-37	115.50	123.00	153.00
	SD-7-37	105.00	112.50	142.50
	SD-9-37	120.00	127.50	157.50
	SD-13-37	150.00	157.50	187.50
	SD-17-37	187.50	195.00	225.00
1938	KS-5-38	70.50	78.00	87.00
	KS-6-38	75.00	82.50	91.50
	KS-7-38	81.00	88.50	97.50
	K-3-38	61.50	69.00	78.00
	K-4-38	70.50	78.00	87.00
	K-5-38	79.50	87.00	96.00
	K-6-38	85.50	93.00	102.00
	K-7-38	93.00	100.50	109.50
	PK-5-38	93.00	100.50	109.50
	PK-6-38	103.50	111.00	120.00
	PK-7-38	112.54	120.00	129.00
	SD-7-38	115.50	123.00	132.00
	SD-9-38	127.50	135.00	144.00
	SD-13-38	172.50	180.00	189.00
	SD-17-38	210.00	217.50	226.50
1939	KS-3-39	67.50	75.00	84.00
	KS-4-39	73.50	81.00	90.00
	KS-5-39	79.50	87.00	96.00
	KS-6-39	84.00	91.50	100.50
	KT-6-39	79.50	87.00	96.00
	K-4-39	79.50	87.00	96.00
	K-5-39	91.50	99.00	108.00
	K-6-39	97.50	105.00	114.00
	K-8-39	118.50	126.00	135.00
	PK-5-39	115.50	123.00	132.00
	PK-6-39	124.50	132.00	141.00
	PK-8-39	145.50	153.00	162.00
	SD-7	135.00	142.50	151.50
	SD-9	150.00	157.50	166.50
	SD-17	240.00	247.50	256.50
1940	A-3-40	69.97	69.97	69.97
	A-4-40	82.50	83.97	83.97
	GSX-6-40	80.33	80.33	80.33
	S8-6-40	87.47	87.47	87.47
	S-6-40	97.50	97.97	97.97
	HS-6-40	103.50	111.00	118.97
	HD-6-40	141.00	146.97	146.97
	HD-8-40	154.50	162.00	167.97
	S-8-40	125.97	125.97	125.97
	R-6-40	109.50	117.00	126.00
	R-8-40	135.00	142.50	146.97
	PR-6-40	145.50	150.47	150.47

LEONARD

1931	L5	$15.00	$22.50	$52.50
	L5S	15.00	22.50	52.50
	L7	16.50	24.00	54.00
	L7S	16.50	24.00	54.00
1932	L400	22.50	30.00	60.00
	A450	24.00	31.50	61.50
	L450	24.00	31.50	61.50
	L550	24.00	31.50	61.50
	L650	27.00	34.50	64.50
	L750	28.50	36.00	66.00
	PA450	24.00	31.50	61.50

*** Price "A" in these tables is the maximum sale price of "as is" refrigerators. Price "B" unreconditioned refrigerators, and price "C" reconditioned refrigerators.**

Behind the ordnance flag

THE workers at Imperial are proud of the Army Ordnance Flag that hangs at the main entrance of the plant . . . proud because this flag serves as a constant reminder of the fact that every Imperial worker is serving on the industrial production front that is so important in mechanized warfare.

The Imperial fittings, the tools and other products that are so familiar to men of the refrigeration and air conditioning industry are now going into the production of the machinery of war whether it be tanks, planes, ships or machine tools.

But along with the work for Ordnance and other branches of service, every effort is being made to help the refrigeration Jobbers and service men in their emergency service work. Every effort is also being made to provide the fittings and other parts for the many new applications of refrigeration and air conditioning that are developing as a result of war work.

THE IMPERIAL BRASS MFG. CO., 1204 W. Harrison St., Chicago, Illinois

IMPERIAL *Refrigeration and Air Conditioning Products*

STRAINERS • DEHYDRATORS • VALVES • FITTINGS • FLOATS • CHARGING LINES
TOOLS FOR CUTTING, FLARING, BENDING, COILING, PINCH-OFF AND SWEDGING

LEONARD—Continued

Year	Model	Price A*	Price B*	Price C*
	PA550	$24.00	$31.50	$61.50
	PA750	28.50	36.00	66.00
1933	L425	25.50	33.00	63.00
	L451	25.50	33.00	63.00
	L531	27.00	34.50	64.50
	L551	27.00	34.50	64.50
	L641	30.00	37.50	67.50
	L651	31.50	39.00	69.00
	L752	33.00	40.50	70.50
	PL451	27.00	34.50	64.50
	PL551	30.00	37.50	67.50
	PL751	37.50	45.00	75.00
	PL952	37.50	45.00	75.00
1934	SL1	33.00	40.50	70.50
	SL15	34.50	42.00	72.00
	SL2	36.00	43.50	73.50
	SL3	37.50	45.00	75.00
	LD2	37.50	45.00	75.00
	LD3	40.50	48.00	78.00
	SP2	43.50	51.00	81.00
	PD2	43.50	51.00	81.00
	PD3	48.00	55.50	85.50
	PD4	52.50	60.00	90.00
	PD5	60.00	67.50	97.50
1935	L300	36.00	43.50	73.50
	LA	36.00	43.50	73.50
	LD553	39.00	46.50	76.50
	SL435	36.00	43.50	73.50
	SL-525	40.50	48.00	78.00
	SL600	43.50	51.00	81.00
	SL721	48.00	55.50	85.50
	PD588	51.00	58.50	88.50
	PD704	55.50	63.00	93.00
	PD896	64.50	72.00	102.00
	PD1059	73.50	81.00	111.00
	SP525	52.50	60.00	90.00
	SP600	55.50	63.00	93.00
1936	LS5-36	48.00	55.50	85.50
	LS6-36	52.50	60.00	90.00
	L3-36	34.50	42.00	72.00
	L4-36	45.00	52.50	82.50
	L5-36	52.50	60.00	90.00
	L6-36	55.50	63.00	93.00
	L7-36	60.00	67.50	97.50
	P5-36	60.00	67.50	97.50
	P6-36	66.00	73.50	103.50
	P7-36	72.00	79.50	109.50
	P10-36	91.50	99.00	129.00
1937	LS5-37	55.50	63.00	93.00
	LS6-37	58.50	66.00	96.00
	L3-37	42.00	49.50	79.50
	L4-37	55.50	63.00	93.00
	L5-37	64.50	72.00	102.00
	L6-37	67.50	75.00	105.00
	L7-37	73.50	81.00	111.00
	P5-37	73.50	81.00	111.00
	P6-37	82.50	90.00	120.00
	P7-37	88.50	96.00	126.00
1938	LS5-38	67.50	75.00	84.00
	LS6-38	69.00	76.50	85.50
	LS7-38	73.50	81.00	90.00
	L3-38	55.50	63.00	72.00
	L4-38	67.50	75.00	84.00
	L5-38	76.50	84.00	93.00
	L6-38	82.50	90.00	99.00
	L7-38	90.00	97.50	106.50
	P5-38	90.00	97.50	106.50
	P6-38	99.00	106.50	115.50
	P7-38	109.50	117.00	126.00
1939	LXB03-39	60.00	67.50	76.50
	LC6-39	76.50	84.00	93.00
	LS4-39	69.00	76.50	85.50
	LS5-39	75.00	82.50	91.50
	LS6-39	79.50	87.00	96.00
	L5-39	85.50	93.00	102.00
	L6-39	91.50	99.00	108.00
	L7-39	100.50	108.00	117.00
	P5-39	100.50	108.00	117.00
	P6-39	111.00	118.50	127.50
1940	LCSX6-40	67.50	75.00	80.33
	LS86-40	76.50	84.00	87.47

LEONARD—Continued

Year	Model	Price A*	Price B*	Price C*
	LS6-40	$84.00	$91.50	$97.97
	LS8-40	94.50	102.00	111.00
	LR6-40	97.50	105.00	114.00
	LR8-40	117.00	124.50	133.50
	LHS6-40	93.00	100.50	109.50
	LHD6-40	112.50	120.00	129.50
	LHD8-40	136.50	144.00	153.00

MAYFLOWER

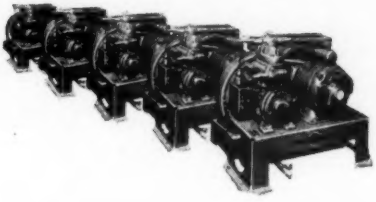
1932	F-34	$12.00	$19.50	$49.50
	F-35	13.50	21.00	51.00
	F-36	15.00	22.50	52.50
	F-75	15.00	22.50	52.50
	F-86	16.50	24.00	54.00
	F-96	18.00	25.50	55.50
1933	G-45	13.50	21.00	51.00
	G-5	15.00	22.50	52.50
	G-6	16.50	24.00	54.00
	G-7	16.50	24.00	54.00
	GP-5	15.00	22.50	52.50
	GP-6	16.50	24.00	54.00
	GP-7	16.50	24.00	54.00
	GP-11	19.50	27.00	57.00
1934	HS-45	15.00	22.50	52.50
	HS-6	19.50	27.00	57.00
	H-7	21.00	28.50	58.50
	HP-6	22.50	30.00	60.00
	HP-7	22.50	30.00	60.00
1935	M-505	22.50	30.00	60.00
	M-635	24.00	31.50	61.50
	M-755	27.00	34.50	64.50
	M-955	30.00	37.50	67.50
1936	G-46	25.50	33.00	63.00
	G-56	28.50	36.00	66.00
	G-66	30.00	37.50	67.50
	G-86	34.50	42.00	72.00
	GP-66	34.50	42.00	72.00
	GP-86	40.50	48.00	78.00
1937	H-47	27.00	34.50	64.50
	H-57	30.00	37.50	67.50
	H-67	36.00	43.50	73.50
	H-87	42.00	49.50	79.50
1938	K-48	43.50	51.00	60.00
	K-58	48.00	55.50	64.50
	K-68	51.00	58.50	67.50
	K-88	58.50	66.00	75.00
	KD-58	52.50	60.00	69.00
	KD-68	60.00	67.50	76.50
	KD-88	67.50	75.00	84.00

MONTGOMERY WARD

1934	425	$21.00	$28.50	$58.50
	650	25.50	33.00	63.00
	750	28.50	36.00	66.00
1935	S-400	28.50	36.00	66.00
	S-550	33.00	40.50	70.50
	L-6500	36.00	43.50	73.50
	L-7500	39.00	46.50	76.50
1936	S-400	34.50	42.00	59.47
	S-550	37.50	45.00	69.65
	S-6610	42.00	49.50	76.97
	E-6620	46.50	54.00	84.00
	E-6820	55.50	63.00	93.00
	E-6120	82.50	90.00	120.00
	P-6625	43.50	51.00	81.00
1937	54	45.00	52.50	69.97
	66	49.50	57.00	69.97
	86	52.50	60.00	80.47
	652	52.50	60.00	80.47
	656	63.00	70.50	100.50
	856	67.50	75.00	105.00
	116	85.50	93.00	123.00
	654	60.00	67.50	97.50

*** Price "A" in these tables is the maximum sale price of "as is" refrigerators. Price "B" unreconditioned refrigerators, and price "C" reconditioned refrigerators.**

You can help War Plants to increase output ...improve products ...reduce rejects



...with "Scotch Giants"

Every day, additional war jobs are being given to G-E "Scotch Giant" condensing units. Many plants in your territory should be good prospects for new installations to speed war production—for *additional* units to be held in reserve for emergencies—and for regular inspection and maintenance to prevent breakdowns.

General Electric "Scotch Giant" condensing units—in a wide range of air cooled and water cooled models in ratings from ¼ to 125 horsepower—provide trustworthy, long-lived, low cost refrigeration. They meet practically every need for industrial processing and food preservation.

America's "Production for Victory" drive offers you an unrestricted market—with tremendous opportunities for being of real service. General Electric Company, Div. 2717, Bloomfield, N. J.

GENERAL ELECTRIC

"Scotch Giant" Condensing Units

MONTGOMERY WARD—Continued

Year	Model	Price A*	Price B*	Price C*
1938	Std-58	$57.00	$64.50	$73.50
	Std-68	61.50	69.00	78.00
	Std-88	58.50	66.00	75.00
	Del-658	73.50	81.00	90.00
	Del-668	76.50	84.00	93.00
	Sup-758	78.00	85.50	94.50
	Sup-958	85.50	93.00	102.00
	Sup-118	105.00	112.50	121.50
1939	Std-48	57.00	64.50	69.97
	Std-62	60.00	67.50	69.97
	620	66.00	73.50	76.97
	622	70.50	78.00	87.00
	Del-50	73.50	81.00	90.00
	Del-60	79.50	87.00	96.00
	Del-668	82.50	90.00	99.00
	Del-940	102.00	109.50	111.97
	Sup-760	88.50	96.00	105.00
	Sup-960	106.50	114.00	123.00
	Sup-118	105.00	112.50	121.50
1940	444	64.50	66.15	66.15
	64	62.27	62.27	62.27
	604	66.00	69.30	69.30
	524	75.00	76.65	76.65
	624	82.50	87.15	87.15
	614	80.47	80.47	80.47
	6224	79.80	79.80	79.80
	634	82.50	89.60	89.60
	644	87.00	94.50	101.47
	646	94.50	102.00	111.00
	744	94.50	102.00	111.00
	924	97.50	105.00	108.47
	944	105.00	112.50	121.50
	124	120.00	127.50	136.50

NORGE

1931	51	$16.50	$24.00	$54.00
	51S	22.50	30.00	60.00
	61	19.50	27.00	57.00
	51P	19.50	27.00	57.00
	61P	21.00	28.50	58.50
	71P	24.00	31.50	61.50
1932	A	24.00	31.50	61.50
	B	24.00	31.50	61.50
	D	25.50	33.00	63.00
	BP	24.00	31.50	61.50
	DP	25.50	33.00	63.00
	F	30.00	37.50	67.50
1933	A44	25.50	33.00	63.00
	D5	28.50	36.00	66.00
	D66	33.00	40.50	70.50
	K	33.00	40.50	70.50
	J	28.50	36.00	66.00
	AP44	25.50	33.00	63.00
	DP66	33.00	40.50	70.50
	JP	28.50	36.00	66.00
	KP	33.00	40.50	70.50
	M	39.00	46.50	76.50
	R	48.00	55.50	85.50
1934	A45	34.50	42.00	72.00
	A55	37.50	45.00	75.00
	A71	45.00	52.50	82.50
	L54	39.00	46.50	76.50
	L67	42.00	49.50	79.50
	S47	36.00	43.50	73.50
	SP47	36.00	43.50	73.50
	SP55	39.00	46.50	76.50
	SP71	46.50	54.00	84.00
	P54	43.50	51.00	81.00
	P67	45.00	52.50	82.50
	P78	51.00	58.50	88.50
	P91	58.50	66.00	96.00
	P110	73.50	81.00	111.00
1935	E310	36.00	43.50	73.50
	E425	40.50	48.00	78.00
	L425	40.50	48.00	78.00
	L519	46.50	54.00	84.00
	L621	49.50	57.00	87.00
	L720	54.00	61.50	91.50
	L804	58.50	66.00	96.00
	P425	42.00	49.50	79.50

NORGE—Continued

Year	Model	Price A*	Price B*	Price C*
	P519	$52.50	$60.00	$90.00
	P621	58.50	66.00	96.00
	P720	64.50	72.00	102.00
	P804	67.50	75.00	105.00
	P953	72.00	79.50	109.50
	P1117	82.50	90.00	120.00
1936	E32-6	37.50	45.00	73.15
	E42-6	51.00	58.50	88.50
	E52-6	52.50	60.00	90.00
	E62-6	55.50	63.00	93.00
	L42-6	54.00	61.50	91.50
	L52-6	57.00	64.50	94.50
	L62-6	63.00	70.50	100.50
	L72-6	70.50	78.00	108.00
	L82-6	75.00	82.50	112.50
	P42-6	61.50	69.00	99.00
	P52-6	69.00	76.50	106.50
	P62-6	73.50	81.00	111.00
	P72-6	79.50	87.00	117.00
	P82-6	82.50	90.00	120.00
	P95-6	91.50	99.00	129.00
	P112-6	111.00	118.50	148.50
1937	S32-37	52.50	60.00	80.47
	S42-37	61.50	69.00	97.97
	S52-37	64.50	72.00	102.00
	S62-37	67.50	75.00	105.00
	S72-37	70.50	78.00	108.00
	N52-37	69.00	76.50	106.50
	N61-37	73.50	81.00	111.00
	N72-37	79.50	87.00	117.00
	N81-37	90.00	97.50	127.50
	P42-37	70.50	78.00	108.00
	P52-37	79.50	87.00	117.00
	P61-37	91.50	99.00	129.00
	P72-37	99.00	106.50	136.50
	P81-37	105.00	112.50	142.50
	LTP81-37	120.00	127.50	157.50
	LTP122-37	150.00	157.50	187.50
1938	A31-8	61.50	69.00	78.00
	S52-8	70.50	78.00	87.00
	S62-8	73.50	81.00	90.00
	S71-8	79.50	87.00	96.00
	R32-8	61.50	69.00	78.00
	R41-8	67.50	75.00	84.00
	R51-8	78.00	85.50	94.50
	R61-8	85.50	93.00	102.00
	R71-8	93.00	100.50	109.50
	R81-8	103.50	111.00	120.00
	R130-8	172.50	180.00	189.00
	P42-8	79.50	87.00	96.00
	P51-8	93.00	100.50	109.50
	P61-8	103.50	111.00	120.00
	P71-8	112.50	120.00	129.00
	P81-8	118.50	126.00	135.00
	LTP81-8	135.00	142.50	151.50
	LTP123-8	180.00	187.50	196.50
1939	G3	67.50	75.00	84.00
	G4	73.50	81.00	90.00
	G5	79.50	87.00	96.00
	G6	84.00	91.50	100.50
	GO4	73.50	81.00	90.00
	GO5	79.50	87.00	96.00
	GO6	84.00	91.50	100.50
	MH5	91.50	99.00	108.00
	MH6	97.50	105.00	114.00
	M5	91.50	99.00	108.00
	M6	97.50	105.00	114.00
	M8	117.00	124.50	133.50
	SN5	94.50	102.00	111.00
	SN6	100.50	108.00	117.00
	SN8	118.50	126.00	135.00
	MHP5	115.50	123.00	132.00
	MHP6	130.50	138.00	147.00
	S5	115.50	123.00	132.00
	S6	130.50	138.00	147.00
	S8	150.00	157.50	166.50
	P6	76.50	84.00	93.00
	PO6	79.50	87.00	96.00

*** Price "A" in these tables is the maximum sale price of "as is" refrigerators. Price "B" unreconditioned refrigerators, and price "C" reconditioned refrigerators.**

after the STORM

* * * * * **the rainbow** * *

AMERICA is finally awakening to the reality of war —total war—war on a scale so vast that it baffles the imagination. Its grim reality is being felt in millions of homes as the cream of our youth and manhood answers the call to the colors, and luxuries, comforts, and even necessities are denied to civilians.

Now, most of us are beginning to realize the seriousness of the emergency. Before it is over, our very right to survive may be tested to the breaking point by our fortitude and willingness to make sacrifices.

We at Henry Valve Co. are happy that our peacetime products are useful to many branches of the government in prosecuting the war to eventual victory. Much as we regret our inability to supply the demands of many of our customers—the only job that matters now is the *winning of the war*.

But even war has some compensations. Under pressure of necessity, science and inventiveness respond with supreme effort and with lasting benefit to mankind of the future. Out of this struggle will come new methods, new materials, new products—to make a better world.

Many new ideas are being developed in our laboratory. When war-time restrictions are lifted, refrigeration and air conditioning will enjoy the benefits of more Henry "firsts."

HENRY VALVE CO.

HENRY

VALVE CO. • 1001-19 N. SPAULDING AVENUE • CHICAGO

PACKLESS AND PACKED VALVES · STRAINERS · DRYERS FOR REFRIGERATION AND AIR CONDITIONING · ALSO AMMONIA VALVES AND FORGED STEEL FITTINGS

NORGE—Continued

Year	Model	Price A*	Price B*	Price C*
1940	AR6	$80.47	$80.47	$80.47
	ARH6	80.47	80.47	80.47
	AR6A	80.47	80.47	80.47
	VR38	73.50	81.00	83.97
	VR3	73.50	81.00	83.97
	VR4	82.50	87.47	87.47
	VR6	97.50	97.97	97.97
	VR6A	97.50	97.97	97.97
	VR8S	100.50	104.97	104.97
	VR6P	105.00	112.50	118.97
	VR6AP	112.50	120.00	125.97
	VRS6P	112.50	120.00	125.97
	MRS8	114.00	121.50	125.97
	MR5	102.00	109.50	111.65
	MR5A	102.00	109.50	111.65
	MR6	112.50	120.00	125.97
	MR6A	112.50	120.00	125.97
	DR5	123.00	130.50	132.97
	DR6	141.00	146.97	146.97
	DR8	153.00	160.50	169.50
	SR5	135.00	142.50	150.47
	SR6	154.50	162.00	167.97
	SR8	165.00	172.50	181.50

PHILCO

1939	KX-4	$52.50	$60.00	$69.00
	KX-6	57.00	64.50	73.50
	KC-5	63.00	70.50	79.50
	KC-6	66.00	73.50	82.50
	KC-7	67.50	75.00	84.00
	K-5	63.00	70.50	79.50
	K-6	66.00	73.50	82.50
	K-7	67.50	75.00	84.00
1940	LS-4	61.50	69.00	78.00
	LX-6	58.50	66.00	75.00
	LS-6	72.00	79.50	88.50
	LC-5	76.50	84.00	93.00
	LT-6	82.50	90.00	99.00
	LC-6	84.00	91.50	100.50
	LT-8	99.00	106.50	115.50
	LF-6	97.50	105.00	114.00
	L-6	100.50	108.00	117.00
	LF-8	105.00	112.50	121.50
	LH-6	102.00	109.50	118.50
	LH-8	105.00	112.50	121.50

SPARTON

1934	464	$10.50	$18.00	$48.00
	574	10.50	18.00	48.00
	724	10.50	18.00	48.00
	884	10.50	18.00	48.00
1935	S-465	21.00	28.50	58.50
	D-465	21.00	28.50	58.50
	D-525	22.50	30.00	60.00
	D-615	22.50	30.00	60.00
	D-745	27.00	34.50	64.50
	D-906	30.00	37.50	67.50
1936	S-466	25.50	33.00	63.00
	S-616	30.00	37.50	67.50
	S-746	33.00	40.50	70.50
	D-466	27.00	34.50	64.50
	D-616	34.50	42.00	72.00
	D-746	37.50	45.00	75.00
	D-906	40.50	48.00	78.00
	CD-466	28.50	36.00	66.00
	CS-616	33.00	40.50	70.50
1937	S-617	36.00	43.50	73.50
	S-747	40.50	48.00	78.00
	D-467	27.00	34.50	64.50
	D-617	40.50	48.00	78.00
	D-747	43.50	51.00	81.00
	D-947	48.00	55.50	85.50
1938	S-468	43.50	51.00	60.00
	S-38	49.50	57.00	66.00
	D-618	55.50	63.00	72.00
	D-748	58.50	66.00	75.00
	DA-618	55.50	63.00	72.00
	DA-748	58.50	66.00	75.00
	DA-948	66.00	73.50	82.50
1939	S-39 Spec.	63.00	70.50	79.50
	S-469	55.50	63.00	72.00

SPARTON—Continued

Year	Model	Price A*	Price B*	Price C*
	D-619	$73.50	$81.00	$90.00
	D-799	81.00	88.50	97.50
	DA-619	75.00	82.50	91.50
	DA-749	84.00	91.50	100.50
	DA-949	102.00	109.50	118.50

STEWART WARNER

1933	40	$16.50	$24.00	$54.00
	45	19.50	27.00	57.00
	55	21.00	28.50	58.50
	65	24.00	31.50	61.50
	77	25.50	33.00	63.00
1934	454S	19.50	27.00	57.00
	554	22.50	30.00	60.00
	564	22.50	30.00	60.00
	574	22.50	30.00	60.00
	704	27.00	34.50	64.50
	714	27.00	34.50	64.50
	724	27.00	34.50	64.50
	834	28.50	36.00	66.00
	564P	28.50	36.00	66.00
	574P	28.50	36.00	66.00
	714P	31.50	39.00	69.00
	724P	31.50	39.00	69.00
	834P	37.50	45.00	75.00
1935	455	27.00	34.50	64.50
	465	27.00	34.50	64.50
	555	30.00	37.50	67.50
	505	30.00	37.50	67.50
	605	33.00	40.50	70.50
	705	36.00	43.50	73.50
	574P	33.00	40.50	70.50
	724P	39.00	46.50	76.50
1936	456	37.50	45.00	75.00
	556	43.50	51.00	81.00
	656	46.50	54.00	84.00
	566	46.50	54.00	84.00
	666	49.50	57.00	87.00
	766	55.50	63.00	93.00
	866	66.00	73.50	103.50
	666P	52.50	60.00	90.00
	766P	61.50	69.00	99.00
	866P	72.00	79.50	109.50
1937	700	70.50	78.00	108.00
	457	58.50	66.00	94.15
	557	63.00	70.50	100.50
	657	72.00	79.50	109.50
	567	66.00	73.50	103.50
	667	73.50	81.00	111.00
	767	81.00	88.50	118.50
	867	90.00	97.50	127.50
	567P	81.00	88.50	118.50
	667P	87.00	94.50	124.50
	767P	100.50	108.00	138.00
	867P	105.00	112.50	142.50
1938	358	55.50	63.00	72.00
	458	67.50	75.00	84.00
	558	72.00	79.50	88.50
	658	75.00	82.50	91.50
	568	75.00	82.50	91.50
	668	79.50	87.00	96.00
	768	94.50	102.00	111.00
	568P	79.50	87.00	96.00
	668P	85.50	93.00	102.00
	768P	102.00	109.50	118.50
	550	67.50	75.00	84.00
	770	69.00	76.50	85.50
1939	469	69.00	76.50	85.50
	459	70.50	78.00	87.00
	559	75.00	82.50	91.50
	659	79.50	87.00	96.00
	769	112.50	120.00	129.00
	358	55.50	63.00	72.00
	458	61.50	69.00	78.00
	550	72.00	79.50	88.50

*** Price "A" in these tables is the maximum sale price of "as is" refrigerators. Price "B" unreconditioned refrigerators, and price "C" reconditioned refrigerators.**

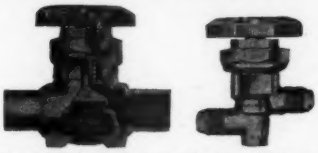
Superior PRODUCTS ★ ★ ★

★ ★ ★ FOR YOUR Defense JOBS

Increased refrigerated space for the accelerated production of perishable foods places a heavy responsibility upon the refrigeration industry. Shortage of metals condemns waste and inefficiency. Do your part to conserve materials. Design to produce more refrigeration per watt hour. Select equipment which requires a minimum of service. Specify SUPERIOR — the quality buy-word of the industry.

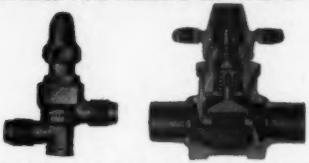
CUT

DIAPHRAGM PACKLESS VALVES



Entire internal assembly removable for soldering or inspection. Equipped with famous pressure cup below diaphragm. Two and three way. Flare sizes ¼" to ¾"; Sweat sizes ¼" to ⅞".

PACKED AND PRESSURE CUP VALVES



Flare and sweat sizes ¼" to ⅝" (two and three way) have hex seal cap. Sweat sizes ¼" to 2⅛" (globe) have wing nut seal cap. Internal assembly (all sizes) removable for sweating to valve body.

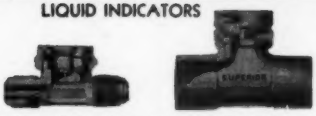
★ *Refrigeration is Vitally Essential to Our National Defense Efforts* ★

CUT AND SAVE

CHECK VALVES

Very sensitive springs. Less than 5 ounces pressure drop. Positively will not chatter or hum. All internal parts easily removable for sweating or inspection. Sizes ¼" to ¾" Flare; ¼" to ⅞" Sweat.

LIQUID INDICATORS

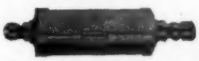


With or without seal cap. Flare sizes ¼" to ⅝"; Sweat sizes ¼" to 1⅜". On ½" Sweat to 1⅜" entire upper assembly may be removed as a unit to facilitate soldering of refrigerant lines to connections.

★ *Refrigeration-Food Preservation and National Defense are Synonomous* ★

FOR FUTURE

DEHYDRATORS



Silica-Gel or Activated Alumina. Refillable and non-refillable. ¼" to ⅜"; ¼ to 5 H.P.; 2 to 60 cubic inches.

MANIFOLDS

With packless or seal cap valves. Two to six valves; ¼" to 2⅛" valves, with or without end fittings. Sweat or flare.

FILTERS

Highly efficient sack type filter. Sizes ¼" SAE to ⅜" SAE. One to five horsepower.

★ *Don't take chances with the Nation's Health -- do the best job possible* ★

REFERENCE

FITTINGS

Unions, adapters, elbows, tees, crosses, caps, etc. ⅛" through 1".

HEAT EXCHANGERS

Unique design gives highest capacity per unit size. Sweat or flare connections. 4200 to 9725 BTU per hour.

Combination Heat Exchanger and Accumulator. From one to ten tons. Especially recommended for low temperature installations.

FLARE NUTS

Brass and steel. Long and frost proof. Forged and bar stock.

★ For complete details—see your Jobber or write for catalog ★

SUPERIOR VALVE & FITTINGS CO.

★ PITTSBURGH ★ PENNSYLVANIA ★

STEWART WARNER—Continued

Year	Model	Price A*	Price B*	Price C*
	770	$76.50	$84.00	$93.00
	558	70.50	78.00	87.00
	658	76.50	84.00	93.00
	568	81.00	88.50	97.50
	668	90.00	97.50	106.50
	768	99.00	106.50	115.50
	568P	99.00	106.50	115.50
	668P	106.50	114.00	123.00
	768P	114.00	121.50	130.50
1940	D-420	76.50	84.00	90.65
	620	84.00	91.50	100.50
	540	90.00	97.50	106.50
	690	97.50	105.00	114.00
	570	105.00	112.50	121.50
	670	112.50	120.00	129.00
	660	121.50	129.00	138.00
	860	136.50	144.00	153.00

UNIVERSAL (Landers, Frary & Clark)

1934–5	445	$15.00	$22.50	$52.50
	456	15.00	22.50	52.50
	467	15.00	22.50	52.50
	478	15.00	22.50	52.50
	489	15.00	25.50	52.50
	867	15.00	22.50	52.50
	878	15.00	22.50	52.50
1936	1444	18.00	25.50	55.50
	1455	18.00	25.50	55.50
	1466	18.00	25.50	55.50
	1477	18.00	25.50	55.50
	1488	18.00	25.50	55.50
	1866	18.00	25.50	55.50
	1877	18.00	25.50	55.50
	1888	18.00	25.50	55.50
1937	S-4	22.50	30.00	60.00
	D-5	24.00	31.50	61.50
	D-6	25.50	33.00	63.00
	D-8	27.00	34.50	64.50
1938	84	28.50	36.00	45.00
	85	30.00	37.50	46.50
	86	33.00	40.50	49.50
	88	39.00	46.50	55.50

UNIVERSAL COOLER

1930	LES-40	$10.50	$18.00	$48.00
	LPS-40	10.50	18.00	48.00
	LEM-40	10.50	18.00	48.00
	LPM-40	10.50	18.00	48.00
	LEH-40	10.50	18.00	48.00
	LPH-40	10.50	18.00	48.00
	LE-500	10.50	18.00	48.00
	LP-500	10.50	18.00	48.00
	LEJ-550	10.50	18.00	48.00
	LPJ-550	10.50	18.00	48.00
	LPJ-70	10.50	18.00	48.00
	P-500	10.50	18.00	48.00
	PJ-70	10.50	18.00	48.00
	P-550	10.50	18.00	48.00
	P-70	10.50	18.00	48.00
1931	LP-4	12.00	19.50	49.50
	LP-5	12.00	19.50	49.50
	LP-6	12.00	19.50	49.50
	LP-7	12.00	19.50	49.50
	P-5	12.00	19.50	49.50
	P-6	12.00	19.50	49.50
	P-7	12.00	19.50	49.50
1932	L-452	13.50	21.00	51.00
	L-552	13.50	21.00	51.00
	L-652	13.50	21.00	51.00
	L-82	13.50	21.00	51.00
	P-552	13.50	21.00	51.00
	P-652	13.50	21.00	51.00
	P-82	13.50	21.00	51.00
	P-55	13.50	21.00	51.00
	P-65	13.50	21.00	51.00
1933–4	400	18.00	25.50	55.50
	455	19.50	27.00	57.00
	X-402	19.50	27.00	57.00
	X-503	22.50	30.00	60.00

UNIVERSAL COOLER—Continued

Year	Model	Price A*	Price B*	Price C*
	X-604	$24.00	$31.50	$61.50
	X-705	25.50	33.00	63.00
	X-503-P	25.50	33.00	63.00
	X-604-P	28.50	36.00	66.00
	X-705-P	30.00	37.50	67.50
1935	435	28.50	36.00	66.00
	535	31.50	39.00	69.00
	635	33.00	40.50	70.50
	835	36.00	43.50	73.50
1936	4-Plus	34.50	42.00	72.00
	5-Plus	37.50	45.00	75.00
	6-Plus	40.50	48.00	78.00
	8-Plus	45.00	52.50	82.50
	PB-4	36.00	43.50	73.50
	PB-6	42.00	49.50	79.50
	PB-8	48.00	55.50	85.50
	UNXP-6	55.50	63.00	93.00
1937	M-427	39.00	46.50	76.50
	M-547	43.50	51.00	81.00
	M-647	45.00	52.50	82.50
	5527	43.50	51.00	81.00
	5627	45.00	52.50	82.50
	D-537	45.00	52.50	82.50
	D-657	46.50	54.00	84.00
	D-757	49.50	57.00	87.00
	PD-65	51.00	58.50	88.50
1938	CL-408	49.50	57.00	66.00
	CL-528	52.50	60.00	69.00
	CL-628	55.50	63.00	72.00
	AD-538	54.00	61.50	70.50
	AD-658	57.00	64.50	73.50
	AD-758	60.00	67.50	76.50
	BD-538	55.50	63.00	72.00
	BD-658	58.50	66.00	75.00
	BD-758	61.50	69.00	78.00
	ADP-658	67.50	75.00	84.00
	BDP-658	67.50	75.00	84.00
1939	M-439	55.50	63.00	72.00
	M-539	60.00	67.50	76.50
	M-639	63.00	70.50	79.50
	D-539	69.00	76.50	85.50
	D-659	73.50	81.00	90.00
	D-759	79.50	87.00	96.00
1940	M-6-40	67.50	75.00	84.00

WESTINGHOUSE

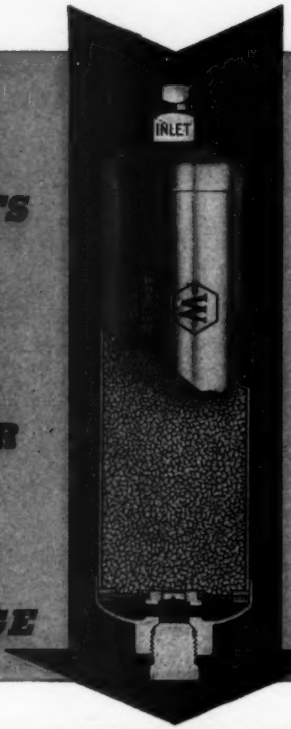
1931	WL-45	$19.50	$27.00	$57.00
	WL-73	25.50	33.00	63.00
	WL-90	25.50	33.00	63.00
	DWL-55	12.00	19.50	49.50
	DWL-75	12.00	19.50	49.50
	DWL-100	15.00	22.50	52.50
	DWL-130	18.00	25.50	55.50
	DWL-180	45.00	52.50	82.50
	DWP-55	12.00	19.50	49.50
	DWP-75	12.00	19.50	49.50
	DWP-100	15.00	22.50	52.50
	DWP-130	18.00	25.50	55.50
	DWP-180	45.00	52.50	82.50
1932	AL-45	22.50	30.00	60.00
	AL-60	28.50	36.00	66.00
	AL-73	31.50	39.00	69.00
	AL-90	36.00	43.50	73.50
	AD-45	22.50	30.00	60.00
	AP-60	28.50	36.00	66.00
	AP-73	31.50	39.00	69.00
	AP-90	36.00	43.50	73.50
	AP-130	60.00	67.50	97.50
	AP-200	82.50	90.00	120.00
1933	BL-43	31.50	39.00	69.00
	BL-45	31.50	39.00	69.00
	BL-53	33.00	40.50	70.50
	BL-55	33.00	40.50	70.50
	BL-63	37.50	45.00	75.00

*** Price "A" in these tables is the maximum sale price of "as is" refrigerators. Price "B" unreconditioned refrigerators, and price "C" reconditioned refrigerators.**

NO GASKETS

NO SOFT SOLDER

NO LEAKAGE



NO ORGANIC FILTERS

NO FELTS

NO STOPPAGE

★ WEATHERHEAD ★

SILICA GEL DRYERS

Rechargeable and Non-Rechargeable types
Tested to withstand 250 pounds pressure

THE WEATHERHEAD CO.

300 EAST 131st ST., CLEVELAND, OHIO

Refrigeration Valves, Fittings and Accessories

WESTINGHOUSE—Continued

Year	Model	Price A*	Price B*	Price C*
	BL-65	$37.50	$45.00	$75.00
	BL-75	42.00	49.50	79.50
	BP-45	31.50	39.00	69.00
	BP-55	33.00	40.50	70.50
	BP-65	37.50	45.00	75.00
	BP-75	42.00	49.50	79.50
1934	CL-43	36.00	43.50	73.50
	CL-45	36.00	43.50	73.50
	CL-53	39.00	46.50	76.50
	CL-55	39.00	46.50	76.50
	CL-63	42.00	49.50	79.50
	CL-65	42.00	49.50	79.50
	CL-75	46.50	54.00	84.00
	CL-95	54.00	61.50	91.50
	CP-45	36.00	43.50	73.50
	CP-55	39.00	46.50	76.50
	CP-65	42.00	49.50	79.50
	CP-75	46.50	54.00	84.00
	CP-95	54.00	61.50	91.50
1935	D-42	40.50	48.00	78.00
	D-54	45.00	52.50	82.50
	D-60	49.50	57.00	87.00
	DL-44	45.00	52.50	82.50
	DL-54	48.00	55.50	85.50
	DL-67	52.50	60.00	90.00
	DL-78	57.00	64.50	94.50
	DLX-67	52.50	60.00	90.00
	DLX-78	57.00	64.50	94.50
	DLX-95	69.00	76.50	106.50
	DP-44	49.50	57.00	87.00
	DP-54	54.00	61.50	91.50
	DP-67	61.50	69.00	99.00
	DP-78	67.50	75.00	105.00
	DPX-67	61.50	69.00	99.00
	DPX-78	67.50	75.00	105.00
	DPX-95	79.50	87.00	117.00
1936	ED-30	40.50	48.00	76.65
	ED-40	51.00	58.50	88.50
	ED-50	57.00	64.50	94.50
	ED-60	63.00	70.50	100.50
	ED-70	69.00	76.50	106.50
	EDX-44	52.50	60.00	90.00
	EDX-54	60.00	67.50	97.50
	EDX-67	70.50	78.00	108.00
	EDX-78	76.50	84.00	114.00
	EDX-95	82.50	90.00	120.00
	EPX-44	55.50	63.00	93.00
	EPX-54	63.00	70.50	100.50
	EPX-67	75.00	82.50	112.50
	EPX-78	82.50	90.00	120.00
	EPX-95	90.00	97.50	127.50
	EPX-135	117.00	124.50	154.50
	EPX-200	157.50	165.00	195.00
1937	FS-50	69.00	76.50	106.50
	FS-60	75.00	82.50	112.50
	FS-70	81.00	88.50	118.50
	FDS-30	52.50	60.00	80.15
	FDS-40	58.50	66.00	96.00
	FDS-50	64.50	72.00	102.00
	FDS-60	72.00	79.50	109.50
	FDS-70	76.50	84.00	114.00
	FD-50	73.50	81.00	111.00
	FD-60	79.50	87.00	117.00
	FD-70	85.50	93.00	123.00
	FD-92	102.00	109.50	139.50
	FPS-50	79.50	87.00	117.00
	FPS-60	90.00	97.50	127.50
	FPS-70	97.50	105.00	135.00
	FP-92	115.50	123.00	153.00
	EPX-135	117.00	124.50	154.50
	EPX-200	157.50	165.00	195.00
1938	HS-52	70.50	78.00	87.00
	HS-62	78.00	85.50	94.50
	HS-72	84.00	91.50	100.50
	HU-30	61.50	69.00	78.00
	HDS-32	61.50	69.00	78.00
	HDS-42	70.50	78.00	87.00
	HDS-52	78.00	85.50	94.50
	HDS-62	84.00	91.50	100.50
	HDS-72	79.50	87.00	106.50
	HD-52	79.50	87.00	96.00
	HD-62	87.00	94.50	103.50

WESTINGHOUSE—Continued

Year	Model	Price A*	Price B*	Price C*
	HD-72	$93.00	$100.50	$109.50
	HD-95	117.00	124.50	133.50
	HPS-52	93.00	100.50	109.50
	HPS-62	103.50	111.00	120.00
	HPS-72	112.50	120.00	129.00
	HP-62	108.00	115.50	124.50
	HP-72	118.50	126.00	135.00
	HP-95	135.00	142.50	151.50
	FP-135	172.50	180.00	189.00
	FP-200	217.50	225.00	234.00
1939	HU-30	61.50	69.00	78.00
	S-6-39	79.50	87.00	96.00
	H-3-39	67.50	75.00	84.00
	H-4-39	73.50	81.00	90.00
	H-5-39	79.50	87.00	96.00
	H-6-39	84.00	91.50	100.50
	A-5-39	91.50	99.00	108.00
	A-6-39	97.50	105.00	114.00
	A-8-39	120.00	127.50	136.50
	E-5-39	115.50	123.00	132.00
	E-6-39	130.50	138.00	147.00
	E-8-39	145.50	153.00	162.00
	HP-135	202.50	210.00	219.00
	HP-200	277.50	285.00	294.00
1940	LS-6-40	80.33	80.33	80.33
	U-3-40	73.50	81.00	83.83
	S-3-40	75.00	82.50	87.33
	S-4-40	85.50	87.33	87.33
	S-6-40	97.50	97.83	97.83
	S-8-40	108.00	115.50	124.50
	H-5-40	102.00	109.50	118.50
	H-6-40	109.50	117.00	122.33
	A-5-40	105.00	112.50	121.50
	A-6-40	112.50	120.00	129.00
	A-8-40	123.00	130.50	139.50
	D-6-40	141.00	148.50	153.83
	D-8-40	153.00	160.50	169.50
	E-6-40	154.50	160.83	160.83
	E-8-40	165.00	172.50	181.50
	A-135-40	247.50	255.00	264.00
	A-200-40	307.50	315.00	324.00
	E-135-40	255.00	262.50	271.50
	E-200-40	315.00	322.50	331.50

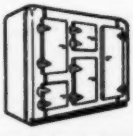
MISCELLANEOUS MAKES

Atwater Kent	$10.50	$18.00	$48.00
Belleville	10.50	18.00	48.00
Bohn	10.50	18.00	48.00
Briggs	15.00	22.50	52.50
Buckeye	10.50	18.00	48.00
Cavalier	10.50	18.00	48.00
Chilrite	10.50	18.00	48.00
Commerce	10.50	18.00	48.00
Graybar-Ilg-Kold	10.50	18.00	48.00
Grinnell	10.50	18.00	48.00
Grunow	12.00	19.50	49.50
King Kold	9.00	16.50	46.50
Lectric-Ice and Challenger	10.50	18.00	48.00
Liberty	10.50	18.00	48.00
Majestic (Sealed)	9.00	16.50	46.50
Majestic (Open)	10.50	18.00	48.00
Merchant and Evans	10.50	18.00	48.00
Mohawk	12.00	19.50	49.50
Rice	9.00	16.50	46.50
Servel-Electric (Open)	10.50	18.00	48.00
Servel-Electric (Hermetic)	9.00	16.50	46.50
Star Freeze	12.00	19.50	49.50
Trukold	9.00	16.50	46.50
U. S. Hermetic	9.00	16.50	46.50
Welsbach	10.50	18.00	48.00
White Mountain	9.00	16.50	46.50
Wurlitzer	12.00	19.50	49.50
Zerozone	12.00	19.50	49.50

*** Price "A" in these tables is the maximum sale price of "as is" refrigerators. Price "B" unreconditioned refrigerators, and price "C" reconditioned refrigerators.**

Refrigeration in an Army Camp

SAFEGUARDS THE SOLDIER'S HEALTH- ADDS ZEST TO HIS VICTUALS



Even the smallest refrigerators in the above are commercial size

EVERY training camp is a tremendous market for refrigeration equipment. Each can be compared to a city of up to 30,000 population and its commercial refrigeration requirements are about as great. You can serve this market and at the same time be sure your equipment functions at its best by using Minneapolis-Honeywell Refrigeration Controls, including the Polartron System of frost free constant cold. Minneapolis-Honeywell Regulator Company, 2934 Fourth Ave. S., Minneapolis, Minn. Branches in 49 principal cities.

MINNEAPOLIS-HONEYWELL REFRIGERATION *Control* SYSTEMS

THE POLARTRON SYSTEM OF FROST-FREE REFRIGERATION

NEW MAXIMUM PRICE REGULATION COVERS HOUSEHOLD SERVICING

IN the recently announced maximum price regulation which will include practically all consumer servicing, it appears apparent that the servicing of domestic refrigerators and other electrical home appliances are included in the price ceiling order which is effective July 1st.

It is recognized that it is not a simple matter to establish definite service charges for repair work on domestic refrigerators, but the highest service rates as charged in March will be the basis for the price ceiling after July 1st and any other established service charges effective in March will be the ceiling price for the duration. Several questions and answers which have been published by the Office of Price Administration clarify the regulating order. These are as follows:

Q. What is the maximum price regulation for consumer services?

A. A separate price regulation placing a ceiling on consumer services.

Q. What is a consumer service?

A. A consumer service under the regulation is a service rendered in connection with a commodity for the ultimate consumer such as the housewife, the motorist or the farmer. But consumer service as used in this regulation does not include an industrial or commercial service, the ceiling prices for which were set by the General Maximum Price Regulation and became effective last May 11.

Q. What are examples of consumer services?

A. Laundry, dry-cleaning and shoe repairs are some of the most common services performed for consumers. Others are the lubrication or repair of a private passenger car, the developing and printing of amateur films, the repair and servicing of home radio sets and electrical appliances, and the sharpening of household knives and scissors.

Q. What are the maximum prices on consumer services?

A. The highest prices which the supplier of the service charged in March, 1942.

Q. Does the consumer service price regulation put a ceiling on charges for such personal services as haircuts and manicures?

A. No, the definition of "service" in the consumer service price regulation is limited to those rendered in connection with a commodity.

Q. What control is there over the price if the service establishment did not charge a flat price for a consumer service?

A. In this instance the ceiling is determined by the pricing method, rates and charges adopted in March 1942.

Q. Then if a garage charged $2 an hour in March for work by a mechanic, and this charge included profit, overhead and the use of tools, as well as labor, the garage may not charge above $2 an hour after July 1.

A. That is right.

Parts Prices Under Control

The Office of Price Administration, Washington, D. C. has given the following information: "Air conditioning and refrigerating equipment and parts, industrial, are covered by Maximum Price Regulation No. 136, Machines and Parts effective July 1, 1942. Industrial air conditioning equipment is defined as equipment with an ice melting equivalent of 25 tons per 24 hour day or more and industrial refrigerating equipment is defined as a machine which requires a prime mover of 25 horsepower or more.

Parts and subassemblies of such refrigerating and air conditioning equipment manufactured by the maker of the end product, as well as, those parts and subassemblies in section 1390.15 appendix A, are covered by Maximum Price Regulation No. 136. "Air conditioning and refrigerating equipment and parts not mentioned in the foregoing paragraph are covered by General Maximum Price Regulation, Bulletin No. 1, effective May 18, 1942."

S S S

AMENDED LIMITATION ORDER L-38

(Continued from page 12)

of this Order install any unused Refrigerating and Air Conditioning Equipment and no Producer, dealer or other authorized channel of distribution shall sell, lease, trade, lend, deliver, ship or transfer any such unused equipment except to other producers, dealers or authorized channels of distribution for resale; and no person (with the exception of other producers, dealers or other authorized channels of distribution for resale) shall accept any sale, lease, trade, loan, delivery, shipment, transfer or installation of any unused Refrigerating and Air Conditioning Equipment.

(2) Notwithstanding the provisions of paragraph (c) (1) hereof, any Producer, dealer or other authorized channel of distribution may make, and any person may accept, any sale, lease, trade, loan, delivery, shipment, transfer or installation of any material or parts to be used in Emergency Repair Service.

...AND KINETIC CAN AND WILL SUPPLY THE "FREON"

TO THOSE in the industry who are so wholeheartedly answering our call to return "Freon" cylinders promptly, Kinetic Chemicals, Inc., wishes to extend its thanks and to give this reassuring statement of the availability of "Freon-12":

There is now *no* shortage of "Freon-12." As the situation stands today, there will be enough "Freon" available for the servicing of all refrigerating machinery in the U. S. and friendly foreign countries. In addition, there will be enough available for the initial charge in such refrigerating machinery as is permitted to be built under the limitation orders of the War Production Board.

This satisfactory supply situation has been brought about through the elimination of bottlenecks—making adequate amounts of the raw material available and raising our plant capacity 38% over that of last fall. As a result, during the months of March, April, May and June, a full allocation of "Freon" was made in the amounts requested by all.

Of course, this does not mean that conservation of "Freon" refrigerants should stop. Allocations of raw materials to this industry are premised on proper and careful use of "Freon-12." We urge you to cooperate with the Refrigeration and Air Conditioning Industry's "Program for Victory"—to impress on every user the necessity for proper maintenance of equipment to conserve power, repair parts and refrigerants, and to return cylinders promptly.

"Freon" is Kinetic's registered trade-mark for its fluorine refrigerants

KINETIC

FREON

REG. U. S. PAT. OFF.

safe refrigerants

KINETIC CHEMICALS, INC., TENTH & MARKET STREETS, WILMINGTON, DELAWARE

(d) *Restricting Production of Refrigerating and Air Conditioning Equipment.*

(1) During the period May 15, 1942 to June 30, 1942, no Producer shall produce any item of Refrigerating and Air Conditioning Equipment in excess of the greater of the two quantities of such item determined as indicated in (i) and (ii) below:

(i) The number of such item for which the Producer has on hand unfilled Preferred Orders;

(ii) The number of such item delivered on Preferred Orders during the period April 1, 1942 to May 15, 1942.

(2) During any calendar quarter, commencing with the calendar quarter beginning July 1, 1942, no Producer shall produce any item of Refrigerating and Air Conditioning Equipment in excess of the greater of the two quantities of such item determined as indicated in (i) and (ii) below:

(i) The number of such item for which the Producer has on hand unfilled Preferred Orders.

(ii) The number of such item delivered on Preferred Orders during the next preceding calendar quarter.

(3) Notwithstanding any provision of this Order, a Producer may, prior to June 30, 1942, assemble any item of Refrigerating and Air Conditioning Equipment other than items listed in paragraph (e) (1) hereof, from fabricated parts which, on May 15, 1942, were in his possession or control or in transit to him, provided that no material other than Fabricated Parts shall be consumed in the assembling operation.

(e) *Restricting Production and Sale of Specific Items.*

(1) No Producer shall, prior to August 13, 1942, produce any of the following equipment except to fill an order of, or for the account of, the Army or Navy of the United States or the United States Maritime Commission. Therefore no Producer shall produce any of the following equipment for any purpose:

(i) Self-contained or remote Draft Beer Dispensers, including storage cabinets and/or water chilling devices which are a part of the dispensing system.

(ii) Carbonated Beverage Dispensers.

(iii) Bottled Beverage Coolers whether of reach-in, counter or self-contained type.

(iv) Low Temperature Mechanical Refrigerators having a net capacity of eight (8) cubic feet or less designed for the storage of frozen foods or for the quick-freezing of food.

(v) Self-contained Room Coolers, Evaporative Coolers and Window Type Air Conditioners having a rated capacity of less than 2 horsepower or a refrigerating capacity of less than 2 tons (American Society of Refrigeration Engineers' Specifications).

(vi) Fountainette Type Soda Fountains.

(vii) Florist Boxes and Florist Display Cases.

(viii) Ice Cream Cabinets.

(2) Notwithstanding any provision of this Order, no PRODUCER shall sell, lease, lend, deliver, ship or transfer to any dealer or other authorized channel of distribution of Refrigerating and Air Conditioning Equipment any of the items of Refrigerating and Air Conditioning Equipment listed in paragraph (e) (1) hereof except parts for Emergency Repair Service.

(3) Notwithstanding any provision of this Order, a DEALER OR OTHER AUTHORIZED CHANNEL OF DISTRIBUTION (including a bottler of carbonated beverages and a manufacturer of ice cream for resale) of Refrigerating and Air Conditioning Equipment may install or may sell, lease, trade, lend, deliver, ship or transfer to any person, any of the items of Refrigerating and Air Conditioning Equipment listed in paragraph (e) (1) hereof (other than Draft Beer Dispensers as defined in subparagraph (e)(1)(i) hereof) which were in his possession or control or in transit to him on the date of issuance of this amendment. This subparagraph (3) applies to parts for Emergency Repair Service of all items of Refrigerating and Air Conditioning Equipment listed in paragraph (e) (1) hereof, including parts for Draft Beer Dispensers as defined in subparagraph (e)(1)(i) hereof.

(f) *Avoidance of Excessive Inventories.* No Producer shall accumulate for use in the production of Refrigerating and Air Conditioning equipment inventories of raw materials, semi-processed materials, or finished parts in quantities in excess of the minimum amount necessary to maintain production of such equipment to the extent permitted by this Order provided that nothing herein shall prevent a Producer from accumulating materials to the extent permitted by any application to him of the Production Requirements Plan (Preference Rating Order No. P-90).

(g) *Records.* All persons affected by this Order shall keep and preserve for not less than two years accurate and complete records concerning inventories, production and sales.

(h) *Audit and Inspection.* All records required to be kept by this Order shall, upon request, be submitted to audit and inspection by duly authorized representatives of the War Production Board.

(i) *Reports.* Each manufacturer to whom this Order applies shall file with the War Production Board such reports and questionnaires as said Board shall from time to time require.

(j) *Violations.* Any person who wilfully violates any provision of this Order, or who, in connection with this Order, wilfully conceals a material fact or furnishes false information to any department or agency of the United States is guilty of a crime, and upon conviction may be punished by fine or imprisonment. In addition, any such person may be prohibited from making or obtaining further deliveries, or from processing or using, material under priority control and may be deprived of priorities' assistance.

(k) *Appeal.* Any person affected by this Order who considers that compliance therewith would work an exceptional and unreasonable hardship upon him, or that it would result in a serious problem of unemployment in the community or that compliance with this Order would disrupt or impair a program of conversion from non-defense to defense work, may apply for relief by addressing a letter to the War Production Board, setting forth the pertinent facts and the reasons why such person considers that he is entitled to relief. The Director of Industry Operations may thereupon take such action as he deems appropriate.

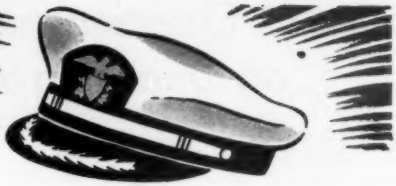
(l) *Communications.* All reports to be filed, appeals and other communications concerning this Order shall be addressed to the War Production Board, Washington, D. C., Ref.: L-38.

(m) *Effective Date.* This Order shall take effect on the date of its issuance and shall continue in effect until revoked.

Issued this 15th day of May, 1942.

J. S. Knowlson, Director of Industry Operations.

Enlisted



FOR THE DURATION!

● The little giant purger is an essential and a doubly desirable item at a time when much refrigeration equipment must be made to last and function correctly for the duration of the war.

It is a profitable investment that quickly pays for itself because—

1. It reduces power costs.
2. It saves expensive refrigerant.
3. It reduces wear and tear on equipment.

The little giant purger gives positive indication when purging is necessary—the sight glass furnishes visible evidence of non-condensable gases in the system.

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WINNERS OF [illegible] AWARD

Questions and Answers on Operation of L-38 Order

WASHINGTON — June 26. — The Air Conditioning and Commercial Refrigeration Branch, in response to numerous requests, today issued the following series of questions and answers on the operations of General Limitation Order L-88, which controls the production and distribution of air conditioning and commercial refrigeration equipment:

1. Q. The sale and installation of what unused refrigerating and air conditioning equipment may be made without first obtaining a preferred order?

A. A dealer or distributor, but not a producer, may sell or install the following types of equipment without first receiving a preference rating from the buyer, provided such equipment was in his inventory or in transit to him on June 15, 1942.

1. Carbonated beverage dispensers.
2. Bottled beverage coolers.
3. Low temperature mechanical refrigerators having a capacity of less than 8 cubic feet.
4. Self-contained room coolers, evaporative coolers and window-type air conditioners.
5. Fountainettes.
6. Florist boxes and display cases.
7. Ice cream cabinets.

The sales of all other unused refrigeration and air conditioning equipment can be made only to fill a preferred order.

2. Q. What is meant by unused refrigerating and air conditioning equipment?

A. All such equipment which has never been sold *and* delivered to the ultimate consumer. This includes repair parts for such equipment, but the sale of such parts without a preference rating is permitted provided they are to be used in emergency repair service as defined in the order.

3. Q. What is meant by preferred order?

A. Any order for the account of designated governmental departments or bureaus; any order for a foreign country pursuant to the Lend-Lease Act; any order bearing a preference rating of A-9 or higher assigned specifically to the delivery of refrigerating and air conditioning equipment and designating the person to receive it; or any order to which has been assigned a preference rating by operations of Preference Rating Order No. P-126.

4. Q. What restrictions are placed on the production of refrigeration and air conditioning equipment by Limitation Order L-38 and Amendment No. 1 thereto?

A. In the period May 15 to June 30, 1942, a producer may manufacture or assemble that equipment for which he has unfilled preferred orders, or the number of items of such equipment delivered on preferred orders in the period April 1 to May 15, 1942, whichever is greater.

Amendment No. 1 provides that all producers may assemble any item of equipment other than those products listed in paragraph (e), from fabricated parts in their inventory as of May 15, 1942. This right expires June 30, 1942.

In the calendar quarter beginning July 1, 1942, a producer may manufacture or assemble that equipment for which he has unfilled preferred orders, or the number of items of such equipment delivered on preferred orders in the past calendar quarter, whichever is greater.

5. Q. Does the order cover the sale of repair parts?

A. Yes, but any repair part may be sold without any preference rating if it is to be used in emergency repair service as defined in the order.

6. Q. What is the proper procedure to follow in obtaining a preference rating for refrigeration and air conditioning equipment?

A. The customer desiring to purchase such equipment must file Form PD-1A with the War Production Board, Washington, D. C., requesting a preference rating of A-9 or higher. The application will be denied unless it clearly appears that the equipment will be used for a purpose essential to the war effort or for an essential civilian need. For example, a rating will be granted for the preservation of food or to a testing laboratory where necessary but will not be granted to enable retail establishments or theaters to obtain air conditioning equipment. A buyer having a preference rating of A-9 or higher is free to buy such equipment as covered by the rating certificate, and the seller is free to sell and install such equipment.

7. Q. May a producer or a distributor

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who has a stock of refrigeration and air conditioning equipment sell such equipment to dealers?

A. Yes, except for the items listed in answer to question 1 above, but repair parts for all equipment may be sold by a producer or distributor to a dealer.

8. Q. Can the installation of commercial refrigeration equipment not pursuant to a preferred order be made where payment or partial payment had been made prior to the effective date of Limitation Order L-38, but the installation has not been started?

A. No. A preference rating of A-9 or higher is needed to make the installation.

9. Q. Where an installation has been started prior to the issuance of Limitation Order L-38, may it be completed without obtaining a preference rating of A-9 or higher?

A. No. A rating of A-9 or higher is necessary to complete the installation.

10. Q. Does application have to be made on Form PD-1A for the right to buy any commercial refrigeration equipment no matter how small the order may be?

A. Yes.

11. Q. Where a manufacturer had an order for equipment bearing a preference rating of A-9 prior to the issuance of Limitation Order L-38, may he install such equipment without violating the terms of the order?

A. Yes.

12. Q. May an unfilled order on hand as of May 15, 1942, bearing a rating lower than A-9, be installed without violating the terms of the order?

A. No. Before the installation can be made, a preference rating of A-9 or higher must be obtained.

13. Q. May ice cream cabinets owned by an ice cream manufacturer be installed without first obtaining a preferred order?

A. Yes, provided they were in the inventory of such manufacturer or in transit to him on June 15, 1942.

14. Q. May bottled beverage coolers and dispensers owned by a bottler of carbonated beverages be installed without first obtaining a preferred order?

A. Yes, provided they were in the inventory of such bottler or in transit to him on June 15, 1942.

15. Q. May air conditioning units of less than 2 hp. be rented by a dealer without first obtaining a preferred order?

A. Yes, provided they were in the inventory of such dealer or in transit to him on June 15, 1942.

16. Q. Does equipment installed "on trial" prior to May 15, 1942, and still "on trial" on that date come within the provisions of the order?

A. Yes, for the reason that the sale had not been completed prior to that date, which was the effective date of the order.

17. Q. May refrigeration and air conditioning equipment held by a dealer for display purposes be sold without obtaining a preferred order?

A. No, as the equipment is considered as "unused" as defined by the order.

18. Q. May a manufacturer obtain additional material with which to make refrigeration and air conditioning equipment?

A. Yes, by filing Form PD-25A, but he must stay within the production limitations of the order.

19. Q. Where a buyer of refrigeration or air conditioning equipment has a rating of A-9 or higher, which is not sufficient to obtain the needed equipment, what is the next move of the buyer?

A. The buyer with such a rating should explore the markets for a seller who can fill his order. If he is unsuccessful, a new application should be filed explaining the circumstances.

20. Q. Do evaporative coolers come within the scope of Limitation Order L-38?

A. Yes.

21. Q. Are stone crock water coolers, where the temperature is lowered by the evaporation of moisture passing through the stone or by the immersion of ice in the contents, covered by L-38?

A. No.

22. Q. Is the rental of water coolers covered by Limitation Order L-38?

A. Yes.

23. Q. Where the ultimate consumer had on hand all of the products and installation parts necessary to the installation, prior to the effective date of the order, and for which he had been billed, is it permissible for him to complete the installation?

A. Yes.

24. Q. If an installation was in progress on the effective date of the order but additional installations were required after the effective date, may a producer supply the additional equipment and supply labor to complete the installation in the absence of a preferred order?

A. No. Form PD-1A must be filed and a preference rating of A-9 or higher obtained before the installation may be completed.

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I Attend My First RSES Meeting

In Which the Writer Finds Out Why Kansas City Refrigeration Service Engineers Society Members Continue to Meet Twice a Month During Their Peak Season and How the Chapter Co-Ordinates Its Efforts in Meeting the War Emergency Problems of Its Area.

By B. K. ANDERSON

I'VE been to scores of meetings, worked them as a reporter, they've been everything from groups of poultry raisers, New Dealers, slot machine operators, grocers, advertising managers and even Prohibitionists to the Chamber of Commerce type. I've even been asked to leave some of these meetings when matters concerning private little rackets as employed widely in many businesses came up for discussion.

Other times they've let me stay on the promise that I wouldn't use what I heard in my "write-ups." Then they would take on knowing grins and talk about their "private rackets," how they take advantage of this or that lack of knowledge on the part of the customers they serve or pretend to serve. Certainly, this type of meeting has been in the minority, and, strangely enough, most of them have been meetings of persons employed in "Service" types of work.

Therefore when I was invited by H. T. McDermott, Secretary of the R.S.E.S. to attend a Kansas City Chapter meeting, and when this invitation was seconded by A. M. Hoover, Secretary of the local Chapter, I, frankly, expected to add another page to my "Little Rackets Book" which includes all sorts of practices used by different types of "Service" operators in gaining the end of profit first and service next.

Of course, these on-the-fence practices are not confined by any means to any single industry. According to a series recently published by a national publication (Reader's Digest) it is rampant in all "Service" types of business including the professions of Law and Medicine, if you can seriously consider the charges made by various groups within these professions.

So, it is not hard to understand the frame-of-mind that went with me to my first R.S.E.S. meeting and the thrill I got when I found a group of men of average circumstances who were actually taking time away from more profitable employment to meet for the sole purpose of finding better ways to serve both their nation and their customers.

In that entire meeting I did not hear one word said that was related to unfair practices in the refrigeration field. What they talked about had to do with how the industry can better serve the war effort first, their customers second, and themselves third.

For instance, our host of the evening, Ernest L. Tramposh, brought up the subject of remanufacturing and new manufacturing of parts so that present units may be kept in operation during the war period. It was his idea that the war effort could be helped, that customers could be better served and that refrigeration service firms could offer better service if all but one or two plants in each type of part manufacture would turn their entire efforts to war production instead of all of them trying to do a little commercial work as well as carry on the war work.

Then Jules DeWilde, who operates a local service company, introduced the subject of scheduling of calls. Here again, the first consideration was: "How best can our united effort—not our personal gain—be served in scheduling of service calls during a period that has recently had refrigeration service companies in the Kansas City area running as much as 5 and 6 days behind on calls."

This matter was taken under consideration and the mass opinion was that those installations most important to the public health and those who stood to take the largest loss through failure of refrigeration equipment should be serviced first. That other jobs should be taken on in consideration of their importance and that, as much as possible, service firms should confine themselves to their specialty.

Talk then veered to consideration of the future of the industry locally and nationally. The idea that present-day service firms are in their best position to realize large earnings in the new refrigeration mar-

ket in the post-war period was given consideration. "We must make loyal friends of our present service customers," the members agreed, "and after the war they will continue to depend upon us for their refrigeration needs."

It was pointed out that the area now has the fewest "Jack Leg" type of service companies operating of any time in its history. That many of these Jacks-of-all-trades have been absorbed by war industry and the Armed Forces, and that refrigeration service firms now are in their best position to establish in the minds of the public that this service industry does have an accepted code of ethics which considers the aim of "Service" above that of "profit at any price."

Frankly, this was a different meeting from any which I have attended. It combined social relaxation in such a manner that it didn't interfere with bringing the matters of business to a successful conclusion. One of the first subjects discussed was whether to end the twice-a-month meetings of the Chapter for the Summer in the face of heavy shop schedules, the warm weather and general shortage of help of all kinds in the area.

Most other organizations in the area call off the majority of their summer meetings and even more are being called off this year due to the above mentioned facts. But, to a man, the meeting was in favor of continuing these discussion get-togethers—and after being with them for a few hours I knew why.

These men have a common purpose, a common goal and they don't want it sidetracked!

What is that goal? Simply put I think it would be something like this: "We want to service friend's jobs, not just take care of another customer. We want to be able to tell a man what is wrong with his equipment, how much it will cost to fix it and not have him look at us as if we are trying to pull something on him.

How do I know this? Let me quote some of the conversation I heard.

"We tell our customers not to hoard belts and other supplies. This is harmful to the war effort and it causes unnatural conditions within our industry and can do the customer nothing except tie up his money in merchandise he doesn't need."

And another: "We realize that much of our new business is marginal in nature. It must be handled carefully because in the past it has been serviced by general repair shops and handy-men of all kinds. These men are in other business now so we have inherited their customers. Frankly, they are

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used to low-priced inferior work. We must take more time with them at first contact and explain that even though specialized refrigeration service may cost more at first, it is by far the least expensive in the long run."

There were scores of these instances. One I remember well was the case where one man knew of another who needed a type of equipment now off the market and was making every effort, without profit to himself, to locate this equipment for that man.

In themselves these instances may seem small and unimportant. They may just seem like what you might expect from any group of friendly neighbors or other social or business group. But in my experience they are both important and unusual for just realizing what this practice on a large scale can amount to: It can mean that through cooperation our factories will need to turn out less supplies for the domestic market since each firm is helping the other locate its needs and is preventing to its utmost the hoarding of badly needed replacements and supplies. It is not only combatting artificial market conditions but is actually taking the same part as production of these essentials itself.

It was when Mr. Hoover told me, "The boys don't want to call off their Summer meetings," that I began to look for the reasons why and discovered that they realized that they can obtain their objectives much more fully co-operatively than they can working entirely as separate individuals. That they can make use of each other's opinions and contacts, that they can establish standards of refrigeration service in the area that finally only this high grade of service will be acceptable to customers.

These are a few of their objectives that I learned from their meeting. There were many more of which I gained only slight glimpses. But on arriving there and finding many of the men had brought their wives, who met downstairs while the husbands held-forth upstairs, I began to get a feeling that here was one outfit that was on the up-and-up.

R.S.E.S. Chapter Notes

WORCESTER CHAPTER

June 2—President H. Pierce Goodney welcomed Stuart Garland, National Second Vice President to the meeting. John Brosnan reported on the progress being made by

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members affiliated with the Auxiliary Fire Department. M. Colbert was elected as assistant to William Tierney on the Entertainment Committee. National Vice President Garland addressed the meeting and requested that a Membership Chairman be appointed by the officers. Major Ben D'Ewart and Pvt. A. Krasnoff are now serving Uncle Sam.

MAJOR BEN D'EWART, member Worcester Chapter, stationed at Fort Monroe, Va., with Coast Artillery Corp.

PITTSBURGH CHAPTER

June 12—President Paul Riddle presided at the meeting held at the Fort Pitt Hotel and one of the principal items of business was the report by Guy Croston on the activities of the national convention. Mr. Croston, among other things, suggested it would be advisable for each member to write to the Refrigeration Branch of the War Production Board, emphasizing the necessity for the securing of household replacement parts. At the conclusion of the meeting members adjourned to Gammon's Restaurant where all enjoyed a late repast.

MILE HIGH CHAPTER

May 20—A special meeting was called for this date and all business dispensed with. The meeting was for the purpose of securing a first-hand report from Harold McCombs who had just returned from the national convention in Chicago. Limitation Order L-38 and Repair and Maintenance Order P-126 were discussed in full and a general question and answer period brought out many interesting facts as to what these orders provided.

June 8—President John Berger proceeded with the usual routine business and then

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turned the meeting over to the Educational Committee. This meeting was devoted to a lively discussion of priorities, limitations and government orders and regulations. The materials situation was discussed at length and among other things it was pointed out that announcement was made by a seal company that they were discontinuing the manufacture of seals, owing to material shortages. At the conclusion of the meeting refreshments were served by Messrs. E. L. Martin and H. R. McCombs.

KANSAS CITY CHAPTER

May 26—President F. C. Smith called upon Jules DeWilde, delegate to the national convention, for a report and Mr. DeWilde comprehensively covered the highlights touched upon by the various speakers. At this meeting C. Visger was elected treasurer of the chapter.

June 7—Because of the inclement weather, Kansas City Chapter which scheduled its annual picnic for Swope Park, found it necessary to transfer it to T. L. Anderson's basement. The thanks of the chapter was extended to Mr. Anderson for his hospitality.

June 9—At this meeting it was decided that instead of holding only one meeting a month during the summer, it would be advisable to carry on with the usual two meetings because of the issuance of orders affecting refrigeration servicing and maintenance. B. K. Anderson, who has authored several articles appearing in the Official Organ, gave an interesting address on some of the contacts he has made among Kansas City contractors securing material for his articles.

ST. LOUIS CHAPTER

April 9—President E. C. Fix dispensed with the regular business until later in the evening in order to accommodate A. L. Spiegel, representative of the Aluminum Ore Company, who presented an interesting technicolor movie entitled "Unfinished Rainbows." The film shows the early uses of aluminum on the banquet table of Napoleon III to the unlimited uses of our present day living. Questions from the floor added to the interest of the meeting on the subject of aluminum and aluminum alloys. Pictures of the bombing of Pearl Harbor and the war in China were also shown.

May 14—President E. C. Fix turned the meeting over to International President, E. A. Plesskott, who introduced A. H. Ricker

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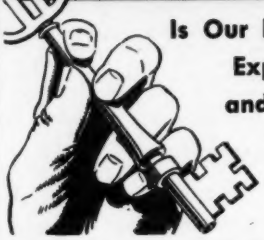

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of the Field Priorities Service. Mr. Ricker explained the functions of the War Production Board and priorities were discussed at length. Naturally a meeting on this subject invited numerous questions and many of the members who attended the national convention were in a position to assist Mr. Ricker in the answering of these questions. Taylor Ingalls gave a practical demonstration of the Taylor Ice Cream Freezer and those attending the meeting had the pleasure of enjoying the products of Mr. Ingall's labors to the fullest extent. New members introduced included Messrs. J. A. Boucher, L. T. Koehl, A. J. Ruehl, Jr., R. N. Smith and Sam Wolff.

BOSTON CHAPTER

May 19—President G. Bradford presided at the meeting of the chapter held at the Smith House, Cambridge. Austin F. Oberacker, of Commercial Motor Service, outlined particularly the troubles of fractional horsepower motors as experienced by refrigeration service men and gave pointers how best to eliminate these difficulties or keep the repair cost down to a minimum.

June 9—A. O. Alexander introduced the questions as to what can be done with used domestic refrigerators and a general discussion ensued on the ceiling prices affecting the sale of used refrigerators. At this meeting it was decided to increase the membership dues of Boston Chapter to $7.50 which was unanimously passed. For the educational discussion of the evening program, Mr. Alexander discussed apple storages and covered in detail an installation which he personally made some five years ago, pointing out that in the erection of this plant several cardinal rules of refrigeration were violated. The discussion of Mr. Alexander's subject by the membership proved one of the most informative and constructive educational meetings held thus far.

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Auxiliary Notes

ILLINOIS VALLEY AUXILIARY

May 8—The meeting was held in the Jefferson Hotel and in opening the meeting, Mrs. G. Dresback led the membership in their pledge of allegiance to the flag. Mrs. John Sackey acted as hostess for the evening in place of Mrs. Charles Geske who was unable to attend. "Hearts" were played and Mesdames Luckert, Brauer and Dresback were the prize winners. Lunch was enjoyed in the Tropics Room.

May 12—A short business meeting was conducted by Mrs. G. Dresback, President, and after disposing of the usual auxiliary business, Mrs. A. D. McGill gave a report of the convention held in Chicago. Mrs. Elmer S. Harris was hostess for the evening and "Bingo" was played. Prize winners were Mesdames Loercher, Viehak and McGill. Defense stamps were given as prizes. Mrs. Viehak and her two daughters were guests of the evening. Lunch was enjoyed with the husbands in the Tropics Room.

* * *

MIDWEST JOBBERS MEET

A MEETING of the Midwest Refrigeration Supply Jobbers Association was held in Des Moines, Iowa on June 22nd, at which every member of the Association was represented by one or more individuals.

In addition to the members of the Association, representatives of a number of the manufacturers were present during a large part of the meeting and have information as to the working out of the Priority and Limitation Orders with reference to their own manufactured products.

At this meeting two new members came into the Midwest Jobbers Association, namely, the Forslund Pump & Machinery Com-

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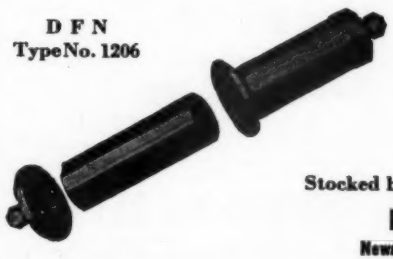

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● Our long experience and complete facilities enable us to furnish the exact gaskets for every refrigeration need. Our service to manufacturers, to jobbers and to service men helps speed war production as well as ordinary requirements.

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pany, Kansas City, Mo. and the Wickham Supply Company, Lincoln, Nebr.

A list of those present is as follows:

Ace Barber, Delavan Engr. Company, Des Moines, Ia.

E. L. Bengston, Republic Electric Company, Davenport, Ia.

J. F. Boyd, Dennis Refrigeration Supply, Des Moines, Ia.

W. E. Burch, Winterbottom Supply Company, Waterloo, Ia.

J. E. Corbett, Penn Electric Switch Company, Goshen, Ind.

C. W. Dennis, Dennis Refrigeration Supply, Sioux City, Ia.

Robert Floyd, Forslund Pump & Machinery Company, Kansas City, Mo.

Otto A. Friemel, Brass & Copper Sales Company, St. Louis, Mo.

Herman Goldberg, Manufacturers' Agent, Chicago, Ill.

Harry G. Hoffman, Hoffman Supply Company, Springfield, Mo.

L. T. Plouff, Ansul Chemical Company, Marinette, Wisc.

Frank J. Pond, Refrigeration & Industrial Supply Co., Minneapolis, Minn.

Carl S. Ruegg, Ruegg Refrigeration Supply, Omaha, Nebr.

L. M. Tesdell, Iowa Radio Corporation, Des Moines, Ia.

E. L. Tramposh, Refrigeration Equipment Company, Kansas City, Mo.

Walter White, Modern Equipment Corporation, Defiance, Ohio.

J. F. Wickham, Wickham Supply Company, Lincoln, Nebr.

Fred B. Hovey, Executive Secretary of N.R.S.J.A., was also present.

In the evening a large number of the members had dinner together at Babe's Restaurant in Des Moines. Most of them were accompanied by their wives. The food was good and the dance music excellent. All present seemed to have a wonderful time.

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KEEP 'em running is Uncle Sam's mandate to the service man. It's no easy job with replacement parts (because of the material situation), hard to get. Blythe Company recognizes its responsibility to get you the tools to work with. Yes, it's a big job and a tough one too, but as always—

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NEW SALES MANAGER FOR LYNCH MANUFACTURING

M. H. PENDERGAST, General Manager of the Lynch Manufacturing Corporation, Defiance, Ohio, makers of Par commercial refrigeration and air compressor equipment, announced, effective June 1st, the appointment of W. C. White as Sales Manager, succeeding W. C. Allen, former Vice-President and Sales Manager, who is retiring from the industry.

W. C. WHITE

Mr. White's background fits him eminently for his new position. He has been associated with the company since it started business—first as representative in Iowa, Wisconsin, and Minnesota, and, for the past two and one-half years, as District Manager of the middle western territory, headquartering in Chicago.

Mr. Allen is very well known in the field, and he will be missed by his many friends in the industry. He is a former Vice-President of R.E.M.A. and was recently elected President of the Association, an honor which he could not fully accept, due to his expected retirement.

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Silent and vibrationless—Dayton V-Belts are especially designed to give a powerful grip on short center applications, without slipping or stretching. Built with stronger, cooler-running Daytex Cord and other patented features, Dayton V-Belts perform better and last longer. Order Dayton V-Belts from your jobber.

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Cold Controls • Pressure Switches
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The Gauge that IS right and STAYS right

WITHOUT the "Recalibrator", Marsh Gauges and Dial Thermometers would still represent the best investment you can make in instrument accuracy. But this feature makes them still better by giving you a simple, sure way of keeping them accurate under all conditions of use—even abuse.

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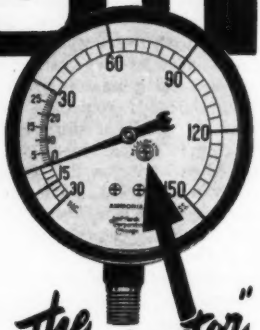

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Proper care doesn't mean dropping it on a concrete floor . . . kicking it around . . . even though it's made to take a beating. You've done it lots of times, we know, without thinking. It doesn't mean putting a pipe over the handle to get extra leverage to bust loose a frozen nut. That puts a strain on the whole tool . . . the lug, the gear, the steel itself . . . as well as on the extension or other attachment and socket being used. None of them are made to stand that kind of abuse.

Never under any circumstances grease your Bonney Ratchet. Give it a gasoline or kerosene bath once a week to clean out accumulated grease and dirt. Then lubricate it with a good grade of light oil. With proper care your Bonney Ratchet will last indefinitely.

Good, plain common-sense in the care of your tools is money in your pocket any time. Today, with good tools scarce and hard to get because of war needs, the care of your tools is more important than ever before.

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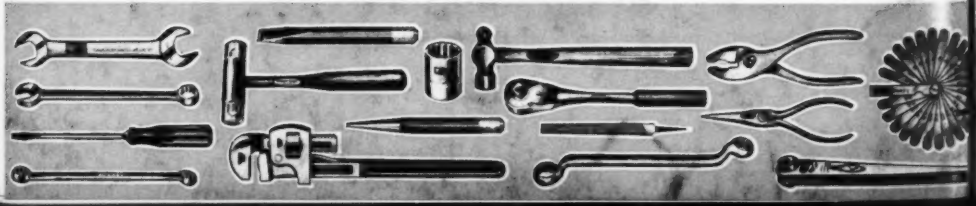
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